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01572535 SUPPLIER NUMBER: 14624749
On 3-D real-time perspective generation from a multiresolution photo-mosaic data base. (Technical)
Hooks, John T., Jr.; Martinsen, Garth J.; Devarajan, Venkat
CVGIP: Graphical Models and Image Processing, v55, n5, p333(13)
Sept, 1993
DOCUMENT TYPE: Technical ISSN: 1049-9652 LANGUAGE: ENGLISH
RECORD TYPE: ABSTRACT

...ABSTRACT: processing speed requirements and the input database size. It is assumed that a multiple resolution, **digital photo** -mosaic of a gaming area is available: the mosaic is comprised of several photographs and...

...created via scanning, digitizing, radiometric and geometric balancing, registration with elevation data, tiling, and other **preprocessing** steps. Multiple-resolution versions of the mosaic can be generated using techniques similar to those...

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01557558 SUPPLIER NUMBER: 14624306
Contrast enhancement using the Laplacian-of-a-Gaussian filter. (Technical)
Neycenssac, Franck
CVGIP: Graphical Models and Image Processing, v55, n6, p447(17)
Nov, 1993
DOCUMENT TYPE: Technical ISSN: 1049-9652 LANGUAGE: ENGLISH
RECORD TYPE: ABSTRACT

ABSTRACT: A time-saving method for enhancing contrast in degraded **digital images** is developed. It has advantages over Marr-Hildreth edge detection but is not preferable to equalization contrast enhancement unless control over which **frequencies** will be enhanced is desired. The proposed **filtering** technique mimics human peripheral vision by performing the Laplacian-of-a-Gaussian (LoG) on the...

...3 x 3 Laplacian as suggested by Rosenfeld. The LoG method is affected less by **noise** , and only one **filter** is needed per **frequency** range enhanced. Sampling and image border problems are addressed with the Fourier transform. Electron micrographs and **digitized photographs** are LoG enhanced and compared with images enhanced via calibration, equalization and the Prewitt-Rosenfeld...

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01502752 SUPPLIER NUMBER: 11944065 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Video teleconferencing: the state of the art. (includes related article on video teleconferencing standards)
Thuston, Francine
Telecommunications, v26, n1, p63(3)
Jan, 1992
ISSN: 0278-4831 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 2138 LINE COUNT: 00181

... decoded back into analog voice and video. There are four steps to video codec technology:
* **preprocessing** -- removes high- **frequency noise** ,
* encoding -- each block of the **picture** , ranging from 8 x 8 to 16 x 16 pixels in size is digitized,

CVGIP: GRAPHICAL MODELS AND IMAGE PROCESSING
Vol. 55, No. 6, November, pp. 447–463, 1993

Contrast Enhancement Using the Laplacian-of-a-Gaussian Filter

FRANCK NEYCENSSAC

Groupe d'Analyse d'Images Biologiques, 3 Boulevard Pasteur, 75015 Paris, France

Received April 25, 1991; revised December 9, 1991; accepted June 3, 1993

A method of contrast enhancement for digital images is provided. As the method uses the LoG (Laplacian-of-a-Gaussian) filter, it is not significantly sensitive to noise. It is easy to develop this linear method when the Marr–Hildreth edge-detection technique has already been applied. LoG is roughly a bandpass filter. Therefore, only a single filter is required to enhance frequencies in one range. To enhance several frequency ranges, several standard deviation coefficients σ must be chosen for LoG convolutions. Progressive contrast ameliorations are obtained in this case. A description, an implementation, an estimate of efficiency, and a comparison with other methods are presented.

I. INTRODUCTION

Contrast enhancement is a visual concept: adapting an image to our eyes. It can be a question only of comfort, optimizing the global distribution of the luminances. It can also be selective modifications of the luminances and their position, to help our whole perception system for a recognition process.

Image analysis is generally performed by a succession of steps of processing of the original image that allows focusing on some "objects" or "elements"; then the techniques used to isolate the fields of interest of the image can be the same as those used for contrast enhancement. Many publications affirm that contrast enhancement can be a fundamental step in image segmentation or analysis in general, but, in fact, it is better to say only that contrast enhancement and image analysis have in common some useful processing techniques.

The aim of contrast enhancement is to fit the digital image to the perceptive field of our eyes. Histogram modification techniques are able to adapt the global distribution of the luminances. Pushing further the perception and human recognition leads to the modification of the luminance's distribution inside small neighborhoods of the image. Illustrating this last topic, Beghdadi and Le Negrate [11] recently showed one option of contrast enhancement based upon edge detection with a nonlinear method. This approach differs from many of the usual digital contrast enhancement methods, which are mainly based upon gray-scale or histogram modification [4–8].

As image enhancement is designed to manipulate the image on the basis of the psychophysical characteristics of the human visual system, we propose a filtering technique similar to human peripheral vision (macula). One purpose of peripheral vision is to attract attention rapidly to moving objects on the sides. The filtering technique involved in this alarm vision (motion vision) is convolution with a "Mexican hat" type filter. An approximation can be given with a Difference-of Gaussian (DoG) or the opposite of a Laplacian-of-a-Gaussian (LoG), but with a high central lobe to provoke a high-intensity transmission. Consequently, in digital image processing, the subtraction of a Laplacian of the image from the image performs a filtering technique similar to the human motion vision. Rosenfeld [3] has presented a method to deblurr images by subtracting a multiple of the image's Laplacian from the image. To allow convolution at several scales, the method we propose, we replace the usual 3×3 Laplacian approximation mask by a Laplacian-of-a-Gaussian (Marr and Hildreth [1]) approximation mask of size $M \times M$. The M size depends on the standard deviation σ chosen for the Gaussian, and also on the desired accuracy of the digital filter relative to the continuous ideal LoG filter. In edge detection with LoG filters, it is necessary to have a large convolution mask to approach the ideal continuous filter. In our application of contrast enhancement, only visual considerations enter, so the enhancement is allowed to convolve with a smaller mask. Note that the original work of Marr and Hildreth is the basis of many recent works; for instance, Berzins [12] analyzed the edge finding accuracy of the LoG operator, and Witkin [13] initiated the use of scale-space representations.

Section II details the method. Section III explains the use of LoG filters in the context of our contrast enhancement technique. Some results are given in Section IV. A valuation framework of contrast enhancement methods is proposed in Section V, and is applied in Section VI for comparisons.

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II. METHOD

A. Presentation

Our method is divided into the following four main steps:

—Computation of the LoG filter, choosing the standard deviation σ and window size h. Obtain an $M \times M$ kernel, with $M = 2h + 1$.

—Calculation of image L, resulting from the convolution of the original image I with the filter $\mathrm{LoG}(\sigma, h)$.

—Multiplication of L by a display factor β for visual considerations. Obtain βL.

—Subtraction of βL from the original image I. Obtain the enhanced image $I - \beta L$.

So, finally: $$\text{Output} = I - \beta \cdot I * \mathrm{LoG}(\sigma, h). \quad (1)$$

B. Comments

The first two steps are common to the classical Marr–Hildreth edge-detection scheme [1], and the latter two follow the idea of Rosenfeld [3]. This combination permits us to choose the range of frequencies to be enhanced. Note that, as far as we know, the scheme Output $= a \cdot I - b \cdot$ Laplacian(I) was first initiated by Judith M. S. Prewitt in the section "Object Enhancement and Extraction" of [2].

From a frequency point of view, our approach is similar, from small σ, to the high-frequency emphasis of Hall *et al.* [15].

According to Wang [14] classification, our method is a local, context-free, edge enhancement. It allows noise reduction plus feature enhancement: by increasing σ, we increase noise and texture cleaning, and enhance parts of the image corresponding to frequencies near $1/(\pi\sigma\sqrt{2})$.

C. Effect of the Method

We can explain what we intend to do with a one-dimensional signal and his processing in the Figs. 1 and 2.

The edge is made sharp around the inflection point c; the contrast in the transition zone is increased because of the small undershoot at the bottom and the small overshoot at the top of the edge slope. Increasing β will increase slope and contrast around c. The standard deviation σ must be fitted to the transition size when noises or nonuniform illumination are added to the signal. If the signal is very noisy, the choise of σ becomes critical; one must choose it sufficiently high to smooth this noise, but not so high as to smooth the whole profile. In this case, our classical scheme of contrast enhancement,

$$\text{Output1} = I - \beta \cdot \mathrm{LoG} * I,$$

can be replaced by

$$\text{Output2} = G * I - \beta \cdot \mathrm{LoG} * I$$

to remove the noise coming from the original image. $G * I$ is the original image smoothed by the Gaussian. In non-noisy images, the difference between I and $G * I$ is important only for high values of σ.

III. LoG USAGE

As we use the Laplacian-of-a-Gaussian filter in our method, we briefly recall in section A some formulae. Section B specifies the sampling conditions of the LoG function. Section C indicates some important computational considerations; more details are given in the Appendix.

A. Signal Processing

One-dimensional Gaussian:

$$G(x) = \frac{1}{\sigma\sqrt{2\pi}} \cdot \exp(-x^2/2\sigma^2).$$

Two-dimensional Gaussian:

$$G(r) = \frac{1}{2\pi\sigma^2} \cdot \exp(-r^2/2\sigma^2).$$

Laplacian-of-a-Gaussian:

$$\mathrm{LoG}(r) = -\frac{1}{\pi\sigma^4} \cdot \left(1 - \frac{r^2}{2\sigma^2}\right) \cdot \exp(-r^2/2\sigma^2); \quad (2)$$

with Fourier transform:

$$\mathrm{TF(LoG)}(\tau) = -4\pi^2\tau^2 \cdot \exp(-2\pi^2\sigma^2\tau^2). \quad (3)$$

B. Sampling

Sampling of the LoG function introduces a parameter k which is dependent on σ and kernel size M. This parameter expresses how close the discrete filter is to the ideal continuous one:

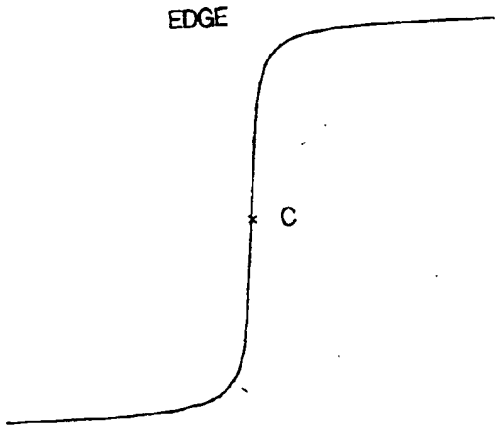
$$\mathrm{LoG} = -\frac{1}{\pi\sigma^4} \cdot \left(1 - k \cdot \frac{r^2}{2\sigma^2}\right) \cdot \exp(-r^2/2\sigma^2). \quad (4)$$

The larger σ and M, the closer the discrete filter is to the ideal continuous filter; then k comes close to 1.

The sampling factor k allows the conservation of a fundamental property of the Laplacian, that is to say,

$$\int_0^{2\pi} \int_{-\infty}^{+\infty} \mathrm{LoG}(r) \cdot dr \cdot d\Theta = 0,$$

Consider a one-dimensional signal I of an ideal edge with an inflection point c in the transition zone separating two uniform zones:

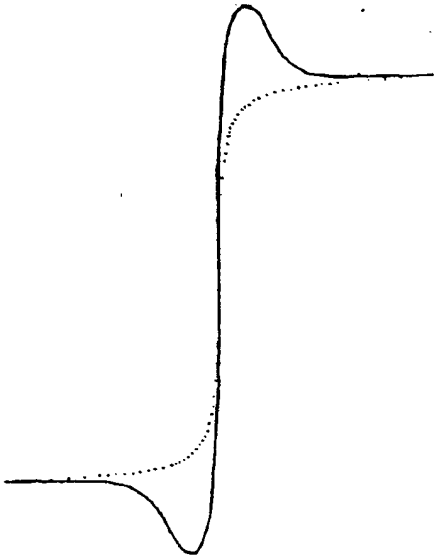


The second derivative of the Gaussian of I is $G'' * I$ with

$$G''(x) = -\frac{1}{\sigma^3\sqrt{2\pi}} \cdot \left(1 - \frac{x^2}{\sigma^2}\right) \cdot \exp(-x^2/2\sigma^2).$$

Taking the opposite of a positive multiple β of $G'' * I$, $-\beta G'' * I$,

and adding it to the original image, $I - \beta G'' * I$.



FIGS. 1 and 2. Representation of $F = I - \beta G'' * I$, for positive β, where I is an ideal edge and $G'' * I$ is the second derivative of a Gaussian convolution. Figure 1 shows I and $G'' * I$ and Fig. 2 shows $-\beta G'' * I$ and $I - \beta G'' * I$.

and in the discrete model with M odd, $M = 2h + 1$, and $r^2 = i^2 + j^2$:

$$\sum_{j=-h}^{j=h} \sum_{i=-h}^{i=h} \left(1 - k \cdot \frac{i^2 + j^2}{2\sigma^2}\right) \cdot \exp\left(-\frac{i^2 + j^2}{2\sigma^2}\right) = 0.$$

Then $k = \sigma^2 \cdot A/B$, where

$$A = \sum_{i=-h}^{i=h} \exp(-i^2/2\sigma^2)$$

and

$$B = \sum_{i=-h}^{i=h} i^2 \cdot \exp(-i^2/2\sigma^2).$$

For usual edge-detection applications with the LoG, one must choose $h \geq 4\sigma$ ($M \geq 8\sigma + 1$) to have precision on the detection of zero-crossing. Our experience confirms this result, and then, this forces $k < 1.001$ (except in cases where σ is too small to allow such a precision). It is not useful to choose h larger than 6σ for the LoG convolution since, even in double-precision computations, we are close to the limit of precision of computer operations.

Display of the enhanced image $I - \beta L$ with a diminished precision $k < 1.1$ in the filter will not reduce the quality of the enhancement. So, for the purpose of contrast enhancement we can go so far as to reduce h just as $k < 1.1$. This choice has the advantage of reducing CPU time consumption, which is generally a serious handicap when programmers compute the Marr–Hildreth filter.

Some users or programmers have fixed $h = 4\sigma$, with σ an integer. Such kernel size is adapted to the edge-detection scheme but not to our method; in this case, of course, users cannot benefit from convolution with a small kernel.

Typically in a general scheme it is better to choose σ and h, then display k and propose to choose again σ and h if the value of k is not satisfactory. If programmers absolutely wish to simplify the contrast enhancement scheme, with σ an integer, h can be fixed to 3σ, or even to 2σ for display purposes only.

C. Computational Considerations

1. *Material*

Our computer is a PDP 11/73 from Digital Equipment Corporation, under the RSX11M+ operating system. It drives a digitizer, Optronics-P-1000, and a system, Comtal Vision 01.

Note that some of the images presented in this article have been processed with the Visilog software package (Noesis company) on an IBM RT under UNIX/AIX/VRM using a PIP Matrox board; in this case, image borders are not processed as described in Appendix A, and the interactive functions are different.

2. *Convolution*

The discrete convolution is simply calculated accurately pixel after pixel. The intermediate calculations are done in double precision 8_bytes_coded to avoid overflows.

For all resulting images, extrema of the gray-level scale are imposed as saturation thresholds: if the value is included in [0;255] it is rounded to the nearest integer, if less than 0 it is set to 0, and if greater than 255 it is set to 255; then it is memorized in an unsigned byte file, ready for display.

When increasing β, the images tend to a binarization at levels 0 and 255. Gray-level 0 then corresponds to positive Laplacians, and 255 to negative ones.

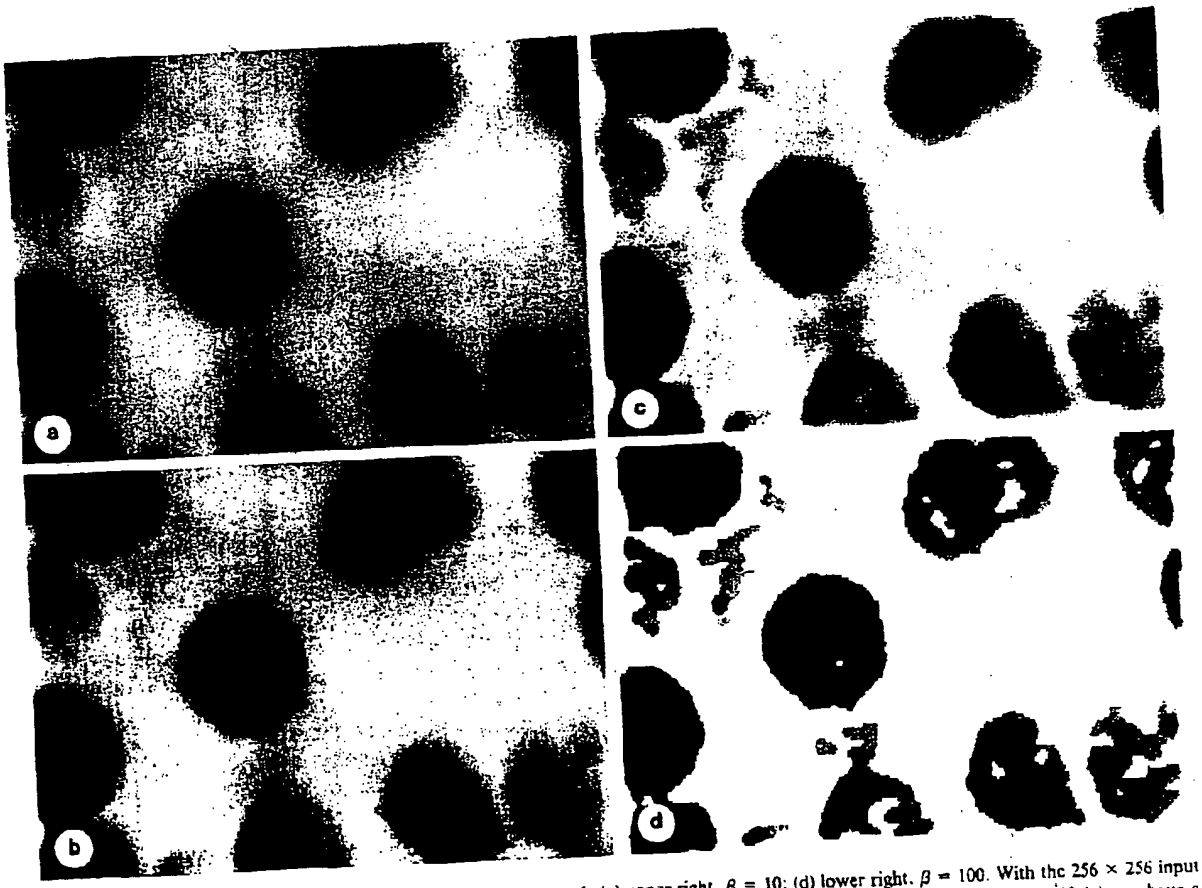


FIG. 3. Effect of β: (a) upper left, original: (b) lower left, $\beta = 1$; (c) upper right, $\beta = 10$; (d) lower right, $\beta = 100$. With the 256×256 input image in (a), σ has been set to 3. There is not any visual difference, with the original image, choosing $\beta = 1$ (b). With $\beta = 10$ (c), we have a correct enhancement respecting the original aspect, and with $\beta = 100$ (d), the enhancement is strong and begins to be close to a binarization.

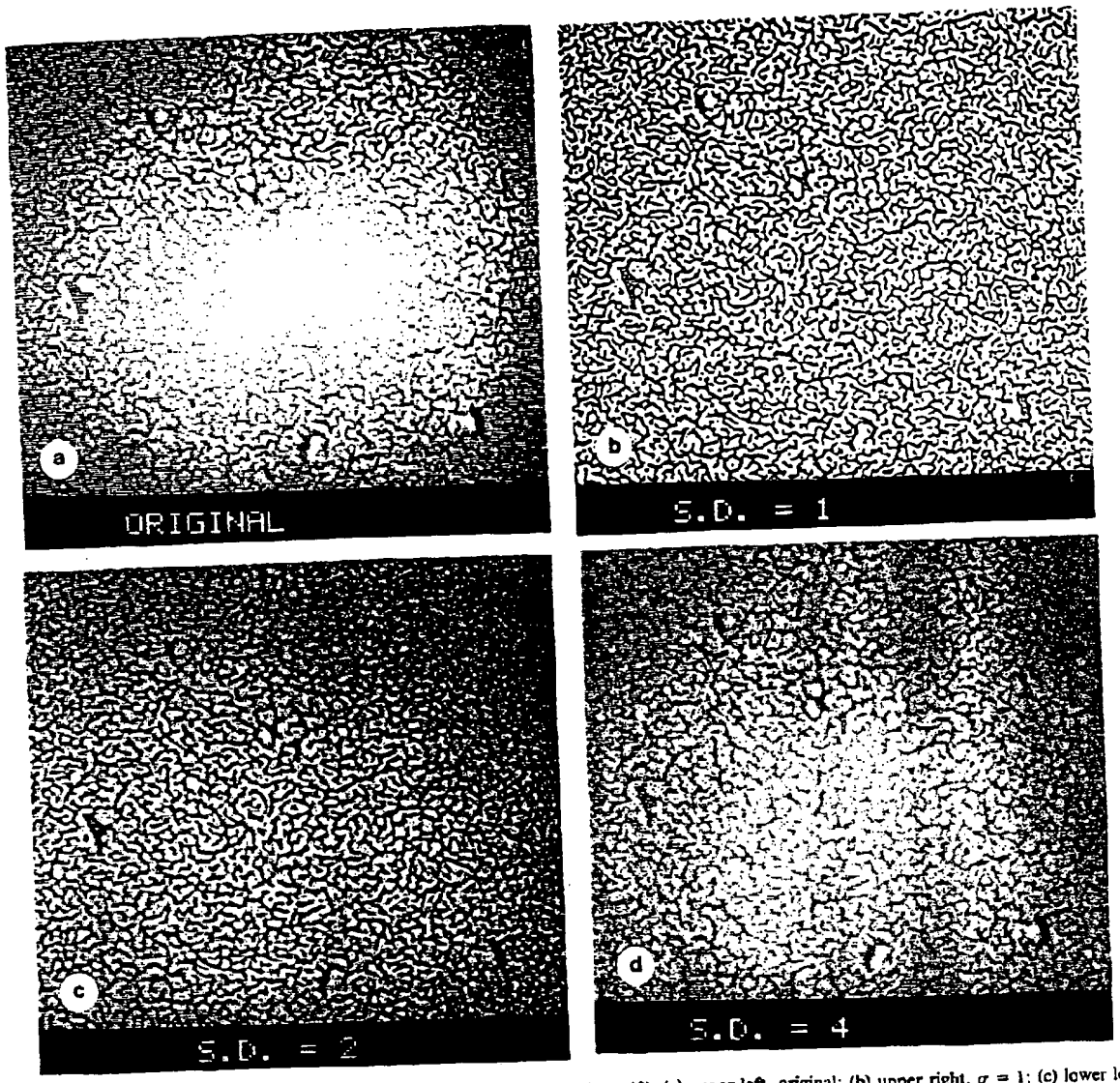


FIG. 4. σ fitting, effect of the standard deviation σ on our scheme ($\beta = 10$): (a) upper left, original; (b) upper right, $\sigma = 1$; (c) lower left, $\sigma = 2$; (d) lower right, $\sigma = 4$.

IV. RESULTS

The kernel size of the convolution is fixed by σ just as $k < 1.1$, so we have only to study the effects of the display factor β and the standard deviation σ. The effects of β are shown in Fig. 3.

A. Choosing σ

We use a poorly contrasted 512 × 512 image of thin film of evaporated gold observed with an electron microscope (see Fig. 4a). The gold particles are to be enhanced. They have widths or diameters roughly from 5 to 8 pixels.

β has been set to 10.

With $\sigma = 1$, the edges of the particles are enhanced and present a pleasant visual aspect. With $\sigma = 2$ the particles are perfectly enhanced; in this case, a threshold can be easily performed to isolate the gold surfaces. With $\sigma = 4$ the result resembles $\sigma = 2$, but a close zoom shows that small particles are smoothed and lost in neighboring larger ones. This is a good illustration of the result pointed

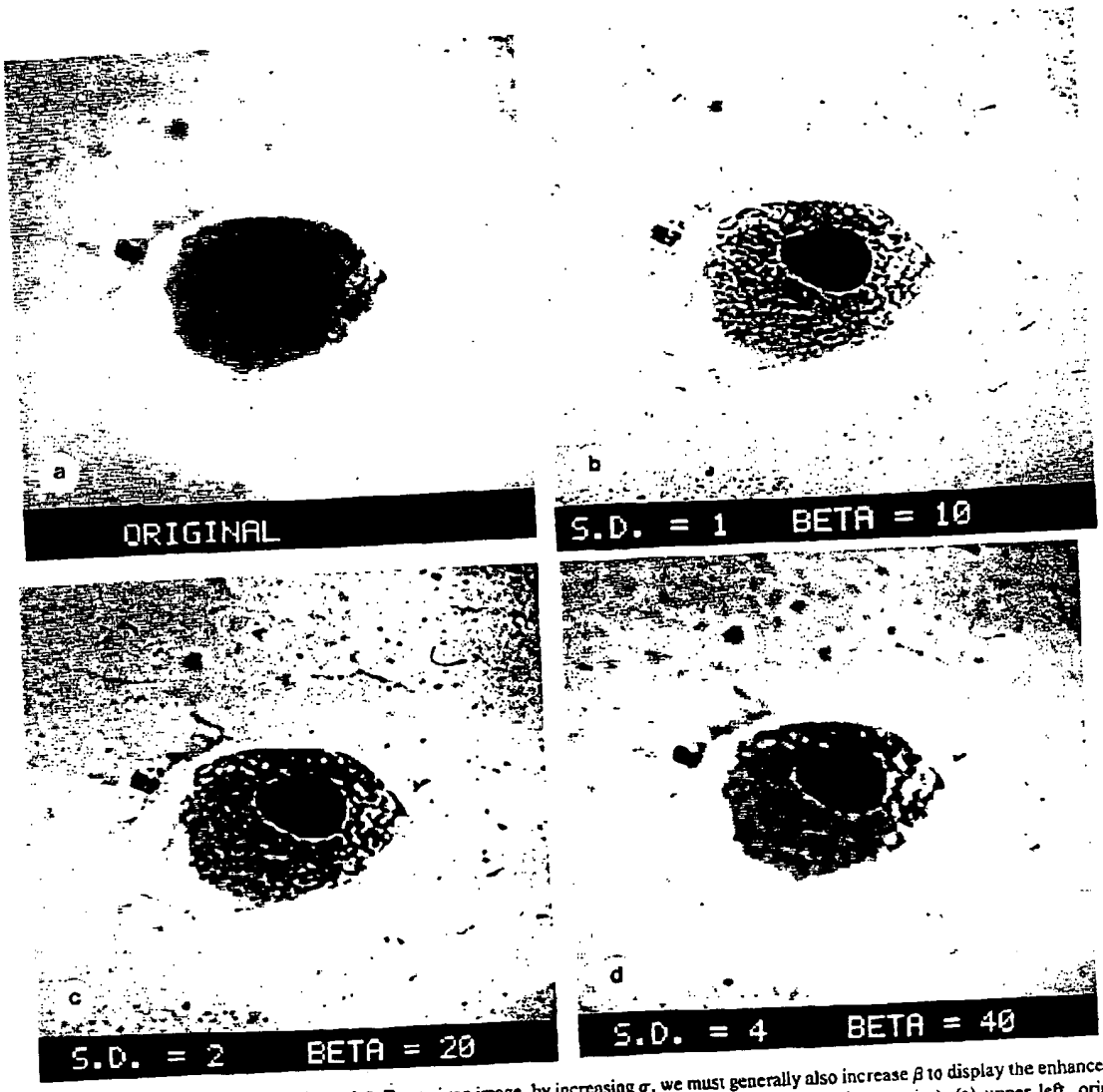


FIG. 5. Conjunction of the effects of σ and β. For a given image, by increasing σ, we must generally also increase β to display the enhancement (because in many cases, the intensity contribution of high frequencies is more important than for low frequencies): (a) upper left, original; (b) upper right, $\sigma = 1$, $\beta = 10$; (c) lower left, $\sigma = 2$, $\beta = 20$; (d) lower right, $\sigma = 4$, $\beta = 40$.

out by Blostein and Ahuja [9]: σ must be chosen to be near $r/\sqrt{2}$.

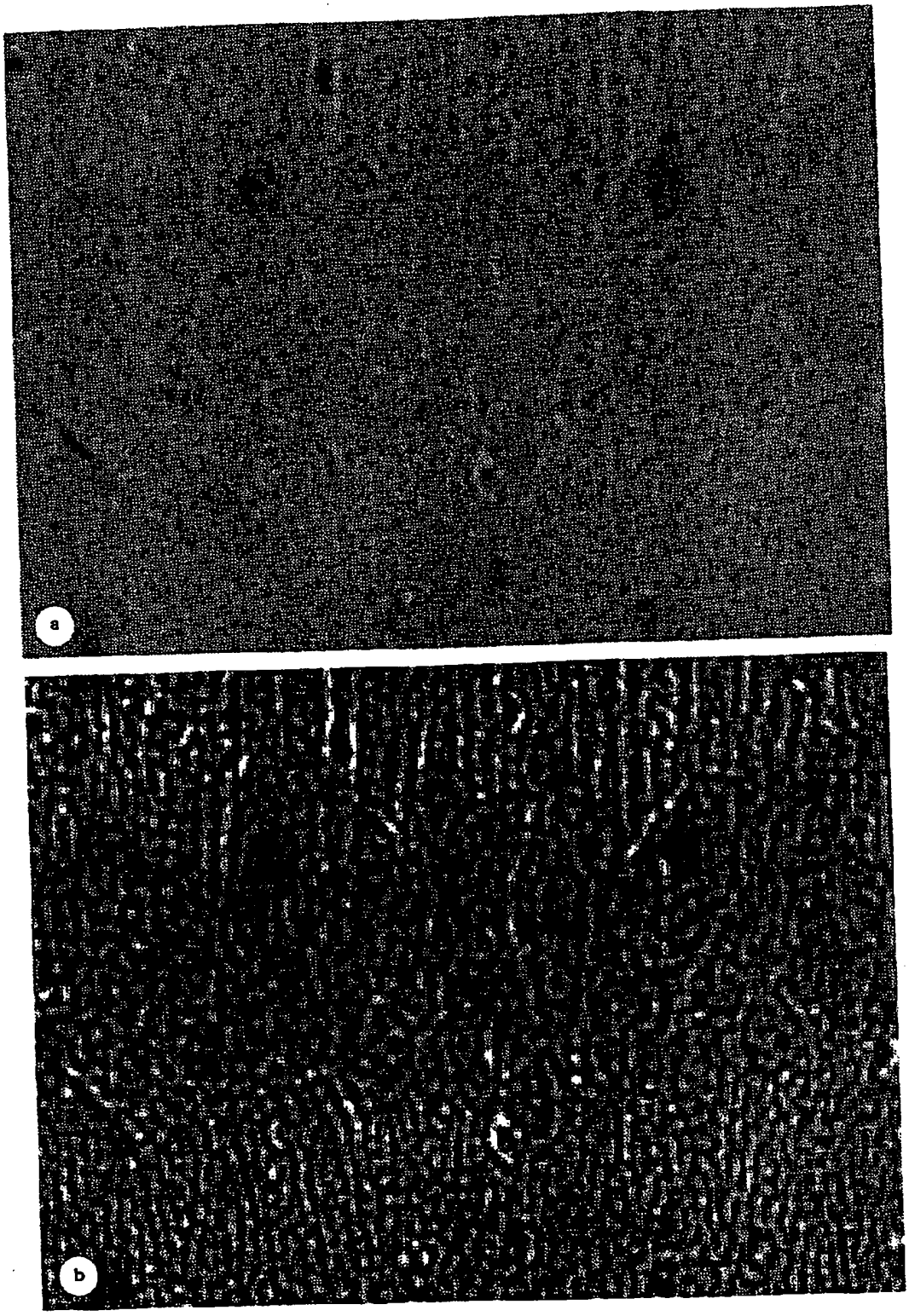
Another illustration of this point issues with the 256 × 256 scanning electron microscope image in Fig. 12.

B. Using Several σ for Complex Images

The 512 × 512 image we present in this section (see Fig. 5) is a stained cell with a poorly contrasted dark nucleus. We only want to enhance the texture of the cell. Then we compute the enhancement starting with $\sigma = 1$ to see particularly the thin chromatin in the nucleus. $\sigma = 2$ will show the coarse chromatin and the cytoplasm texture.

For $\sigma = 1$ we took $\beta = 10$, for $\sigma = 2$ we took $\beta = 20$, and for $\sigma = 4$ we took $\beta = 40$ to be able to see some difference from the original; it shows that the intensities of high frequencies are greater than intermediate frequencies. A Fourier analysis would certainly help us to quantify the factor β; it is one of the topics of our further investigations.

FIG. 6. Images CNE. (a) upper, original image CNE used for comparisons: (b) lower, result of our method on CNE using $\sigma = 1$ and $\beta = 10$.



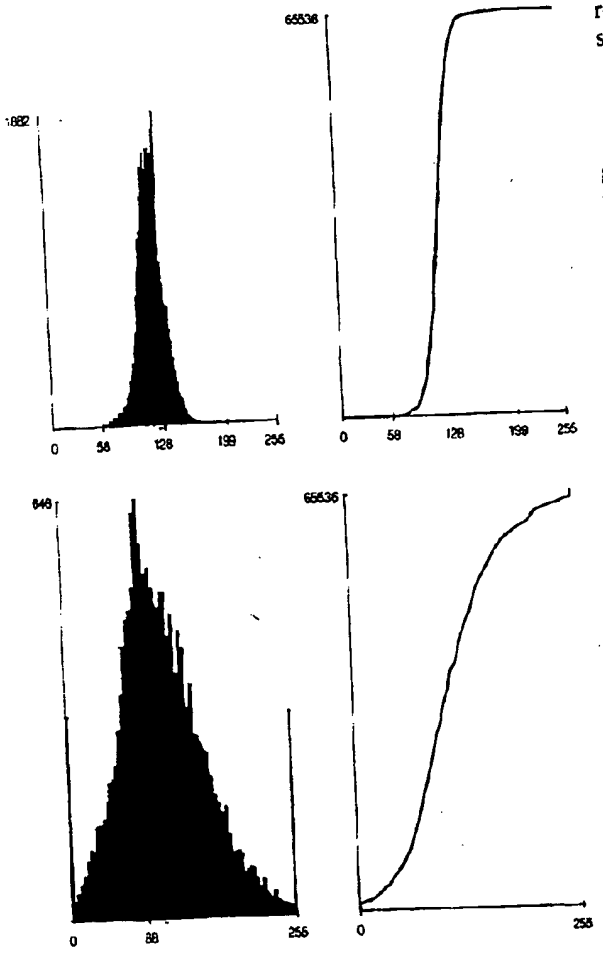


FIG. 7. Histograms (filled) and cumulative histograms (vector) of the images shown in Fig. 6.

Taking σ greater than 10 would strongly smooth some parts of nucleus and cytoplasm edges when they are close together. Particularly, the upper edge of the nucleus is close to the cytoplasm edge, and in this region the gray-level vertical profile of the image looks like a staircase function. Then we observed the "propagation effect" defined by Shah *et al.* [10], that is to say, in this case: When increasing σ, the zero-crossings corresponding to the background-cytoplasm edge and to the cytoplasm-nucleus edge are attracting each other and meet together in a single zero-crossing located inside the cytoplasm.

We have to consider that in contrast enhancement it is better to respect contour localization in order to conserve relevant information, in which case a small operator, i.e., small σ, is required.

V. VALUATION

We first briefly analyze the modification of the histogram when we use our method. We show how the error root mean square (ERMS) between the original image and the enhancement can be theoretically calculated and what can be expected practically. Then the conditions to avoid some resolution loss are explained. From the Section D onward, a valuation framework, based on a contrast gain measure and a slope increase measure, is defined.

A. Histograms, an Example

Histograms and cumulated histograms of one original 256×256 image (Fig. 6a) and its enhancement (Fig. 6b) are shown in Fig. 7. The parameters of the enhancement are $\sigma = 1$ and $\beta = 10$. These images are our references throughout Section V.

Without significant loss of information the enhancement is locally strong. This type of image is particularly suited for our contrast enhancement method because our contrast enhancement operation provokes a histogram filled over the entire scale. This is close to an equalization, and so permits a more comfortable vision.

B. Error Root Mean Square

One may calculate the ERMS between the original and enhanced images (size N) to evaluate globally the modification brought to our method:

$$\begin{aligned} \mathrm{ERMS} &= (\Sigma\Sigma(I - F)^2)^{1/2}/N^2, \\ &= (\Sigma\Sigma(I - (I - \beta \cdot \mathrm{LoG}(I)))^2)^{1/2}/N^2, \\ &= (\Sigma\Sigma(\beta \cdot \mathrm{LoG}(I))^2)^{1/2}/N^2, \qquad \text{so finally} \\ &= \beta/N^2(\Sigma\Sigma(\mathrm{LoG}(I))^2)^{1/2}. \end{aligned}$$

Just as we concluded in the previous sections, our enhancement scheme strongly depends on β for display. Independently from the multiplicative factor, enhancement depends on $(\Sigma\Sigma(\mathrm{LoG}(I))^2)^{1/2}$. This formulation only explains, in fact, possibilities of enhancement. Truncations and saturation thresholds inevitably forced contrast gain to be lower.

C. Resolution Loss

With the analytical formula (1), the operation would be theoretically invertable, and so without resolution loss. Because of sampling, truncatations, and saturation thresholds, the reality is very different. The higher β,

FIG. 8. Images Lena: (a) upper, original image Lena used for comparisons; (b) lower, result of our method on Lena using $\sigma = 8$ and $\beta = 2$.

FIG. 8—*Continued*

FIG. 9. Degraded images: (a) upper, Lena + N = Lena degraded with a uniform random noise of range 32. (b) lower, result of our method on Lena + N ($\sigma = 8$, $\beta = 2$).

the higher the resolution loss. But the major cause of resolution loss occurs when the contribution of high frequencies becomes negligible, typically when $\sigma > 2$: the higher σ, the higher the resolution loss.

D. Morphological Gradient

The usual definition of contrast CN is

$$CN = (I_{max} - I_{min})/(I_{max} + I_{min}),$$

where I_{max} and I_{min} are the maximum and minimum intensities in a given neighborhood.

With this definition, CN is bounded by 1 when the intensities reach the upper and lower bounds of the gray-level scale. This definition cannot be sufficient to explain the contrast enhancement because it does not take into account the slope at the contour position.

In a digital image, the optical criteria are not often best suited for automatic processing. In this event, it seems to us that it would be better to take the brute difference Max–Min to evaluate a contrast in a digital image. This brute difference has been used in mathematical morphology [16, 17], as Max and Min can be calculated with the morphological operations of, respectively, dilation and erosion. It is called Morphological Gradient (MG):

$$MG = \text{Dilation} - \text{Erosion}.$$

The same structuring element size is taken for the two morphological operations. It determines the size of the neighborhood where the contrast is defined.

MG is used in the following section to measure the contrast gain of our enhancement.

E. Contrast Gain

1. *Preliminary Considerations*

In a contrast enhancement scheme, the aim is to increase contrast between several significant regions. It is equivalent to a "mise en evidence" of the contours limiting the significant regions. This can be considered as a contrast increase orthogonal to the contour. Suppose a contour model based on the zero-crossings (ZC) of the Laplacian-of-a-Gaussian (the Marr–Hildreth edge-detection scheme); then our method is optimal in contrast gain on the ZC pixels. The contrast gain is always positive on the ZC pixels. Contrast loss can occur for non-ZC pixels. Contrast gain would be totally determined by the $\beta \cdot \mathrm{LoG}(I)$ image if there had not been any truncations and thresholds.

2. *Contrast Gain Measure*

(a) *General Approach.* Our contrast gain measure (noted cgm) is defined by the mean of contrast gain image for the set of contour pixels, here the ZC. The contrast gain image (noted CGI) is defined by the subtraction of morphological gradients of the enhanced image and the original image, and masking with the ZC:

$$\text{cgm} = \text{mean(CGI)} \quad \text{on the } ZC_{mask}$$
$$\text{with} \quad CGI = ZC_{mask}(MG(F) - MG(I)).$$

The MG operation is determined by the structuring element size s.

cgm increases as s increases:

s	1	2	3	4	5
cgm	89	123	142	155	163

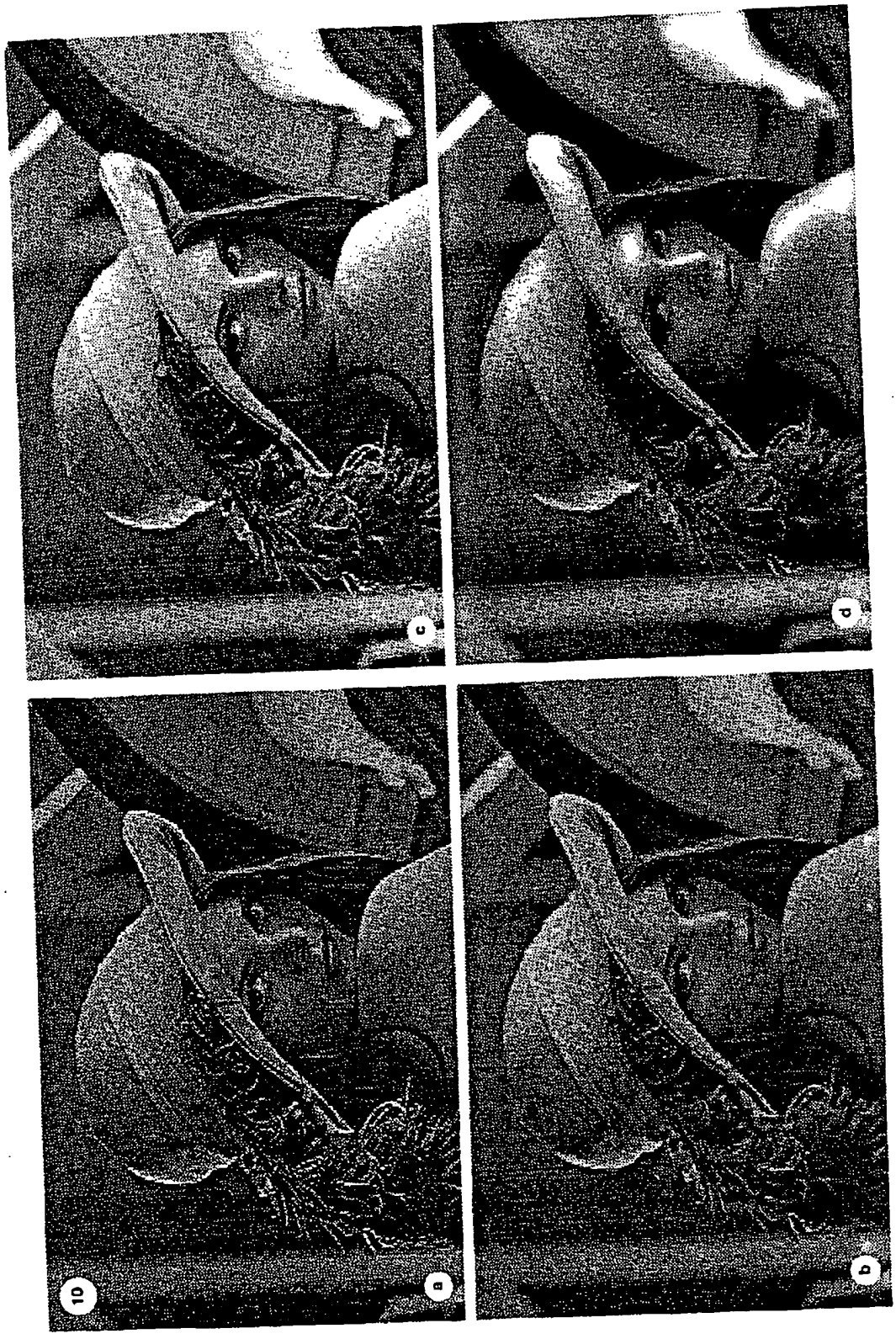
(b) *Choosing the Structuring Element Size.* Most (MG) applications use a structuring element of size 1 to avoid delocalization and blurring of the edges. Our use is totally different because we are not looking for an estimate of the gradient but for an estimate of the contrast. This estimate will be optimized if the size of the structuring element matches the spatial extend of the edges. Taking $s = \sigma\sqrt{2}$ rounded to nearest upper integer will ensure that the enhancement due to the LoG will totally be taken into account in the measure, as $\sigma = 1$, $s = 2$, and cgm = 123.

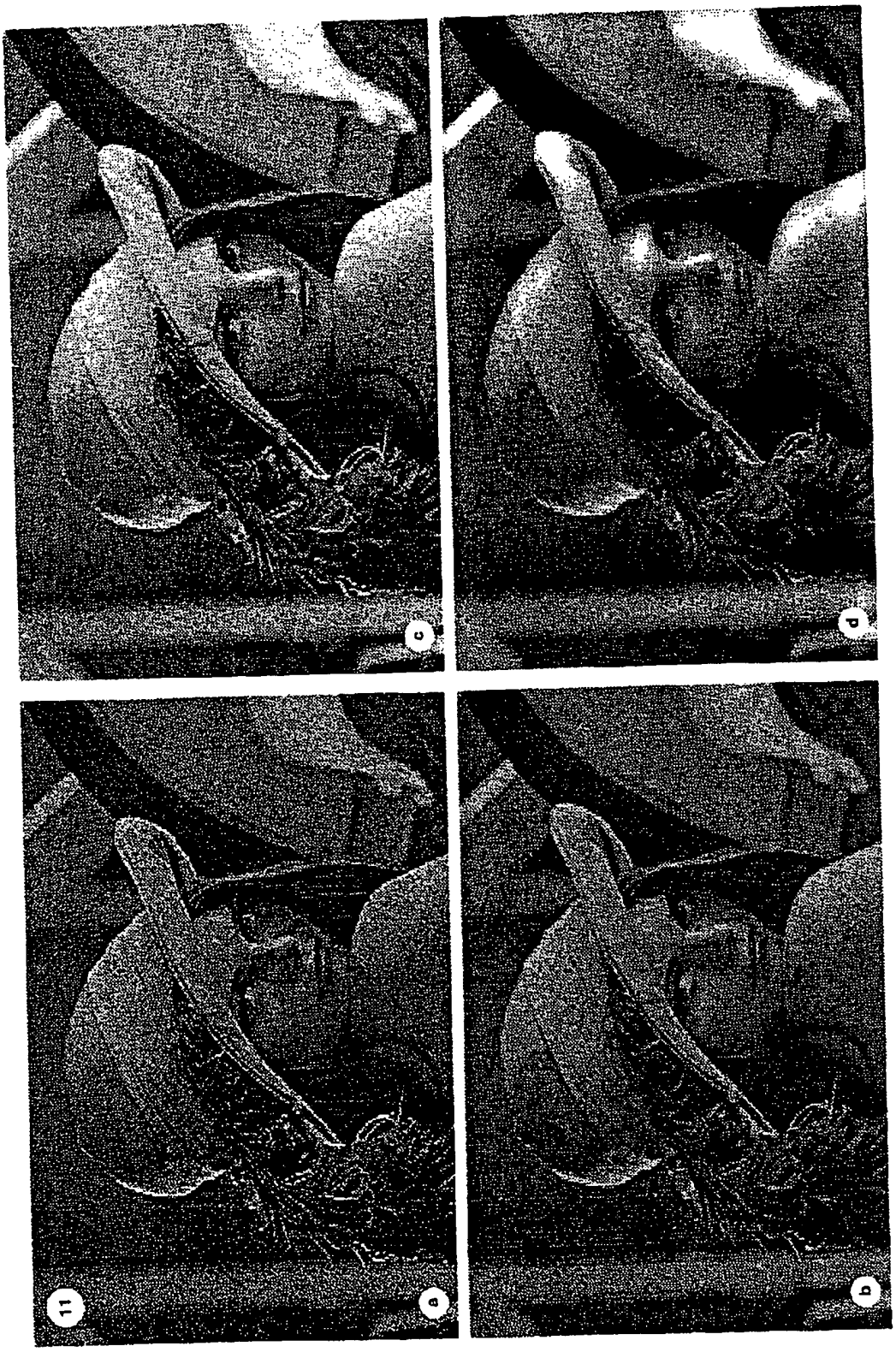
F. Slope Increase Measure

We define slope increase measure (noted sim), for a set of contour pixels, by the mean of the ratio of gradients of the enhanced image and the original image. We could choose Sobel masks to evaluate the gradients, but an estimate as limited as possible is required. Finally, we chose the Morphological Gradient with the 4-neighboring structuring element. This operation will be noted EMG to distinguish it from the classical MG in an 8-neighborhood:

$$\text{sim} = \text{mean(SII)} \quad \text{on the } ZC_{mask}$$
$$\text{with} \quad SII = ZC_{mask}(EMG(F)/EMG(I))$$

FIGS. 10 and 11. Comparisons with other methods: Fig. 10, for Lena; Fig. 11, for Lena + N. Seeing Lena the right way up (not the page), quadrants are indexed as follows: (a) upper left, Prewitt–Rosenfeld method $\beta = 2$; (b) lower left, Calibration; (c) upper right, Equalization; (d) lower right, our method ($\sigma = 8$, $\beta = 2$).





Our slope increase image SII ranges from 1 to 152 on ZC pixels with a mean of 5.0: sim = 5.0.

Contrast gain measure cgm and slope increase measure sim give a complete information on the enhancement when both of the following conditions are satisfied on the contour reference set (the ZC-pixels in this paper).

Condition 1: CGI levels are all positive.
Condition 2: SII levels are all greater than 1.

VI. NOISE SENSITIVITY AND COMPARISONS

A. Images

Four images are used for our comparisons:

—CNE: The image of Fig. 6a.
—CNE + N: The same image added with a uniform random noise of range 32, Fig. 9a.
—The "international" Lena image, in format 256 × 256, Fig. 8a.
—Lena + N: The same image added with a uniform random noise of range 32, Fig. 9a.

The first two enhancements correspond to $\sigma = 1$, $\beta = 10$ (Figure 6b). The two others (Lena images) have been realized with $\sigma = 8$, $\beta = 2$ (Figs. 8b and 9b).

B. Methods Used for Comparisons

Three contrast enhancement methods have been used for comparisons:

—Calibration: the histogram transformation which expands the gray-level range to cover the whole dynamic.
—Equalization: the well known cumulated histogram transformation.
—The Prewitt–Rosenfeld (P–R) usual method with an elementary Laplacian kernel. $\beta = 10$ for the first two enhancements, and $\beta = 2$ for the two others.

Figures 10 and 11 present the four enhancements for, respectively, the Lena and degraded Lena images.

Our comparison scheme is totally determined with a reference set of contours, the contrast gain image CGI and its structuring element of size s, and the slope increase image SII.

C. Results

Table I presents the results for each image. The product of the contrast gain measure cgm by the slope increase measure sim scores the methods, and the percentage to the best one is calculated for each image. In the last column, comments indicate if one or both of conditions 1 and 2 are not satisfied. Contrast loss (CL) indicates that some of the ZC pixels have negative levels in the CGI. Identically with the SII, when some of the levels are less than 1, it is indicated as a slope decrease (SD), important (ISD), or even very important (VISD).

TABLE I

Image	Method	cgm	sim	Product	%	Comments
CNE	Ours	123	5.0	615	100	
	Calibration	27	1.0	27	4	
	Equalization	125	4.9	612	100	
	P–R	50	3.0	150	24	
CNE + N	Ours	142	3.6	511	77	SD
	Calibration	25	1.0	25	4	
	Equalization	135	3.9	526	79	CL SD
	P–R	166	4.0	664	100	ISD
Lena	Ours	41	1.3	53	100	
	Calibration	10	1.0	10	19	
	Equalization	42	1.2	50	94	
	P–R	17	2.5	42	80	ISD
Lena + N	Ours	34	1.2	41	100	CL SD
	Calibration	4	1.0	4	10	
	Equalization	36	1.1	40	98	CL SD
	P–R	42	0.8	34	83	VISD

Final scores

Method	Grand total of %	Score
Ours	377	1
Equalization	373	2
Prewitt–Rosenfeld	287	3
Calibration	37	4

For the degraded images we used the ZC_{masks} of the original images; if we had processed the ZC, there would never have been any contrast loss (or slope decrease) with our method.

D. Discussion

Scores of our method and Equalization are close. With the contour reference set chosen, the ZC pixels of the LoG used in our scheme, scores rank our method first. In addition, there is less contrast loss and slope decrease than with Equalization in degraded images. For sets of contours defined by other edge-detection techniques, our method is just passed by Equalization in a few other tests we performed; anyway, our method has less contrast loss and slope decrease.

The only one which respects contrast and slope gain in all cases (even with degraded images) is Calibration. This is natural, as Calibration is a strictly increasing transformation.

The usual Prewitt–Rosenfeld method is suited for deblurring but, of course, has pitfalls when low frequencies are to be enhanced, and is sensitive to noise. It is expressed in our results by an important slope decrease on some of the contour pixels. With a suitable normalization, the P–R method would be equivalent to ours with $h = 1$ and σ near 0.5.

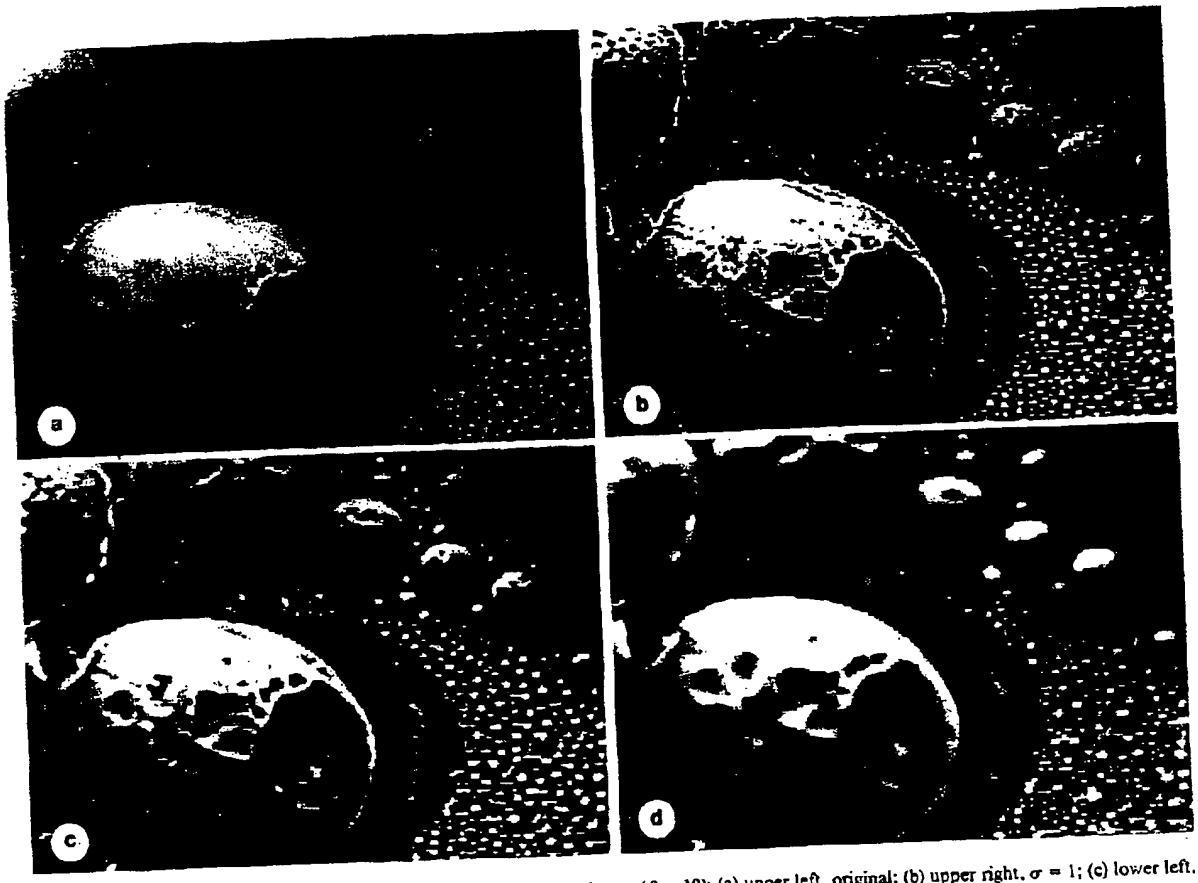


FIG. 12. Our method applied on a scanning electron microscope image ($\beta = 10$): (a) upper left, original; (b) upper right, $\sigma = 1$; (c) lower left, $\sigma = 2$; (d) lower right, $\sigma = 4$.

One can be surprised by the increase of some of the scores between images and degraded images. This can be explained, since the additive uniform random noise provokes a local gray-scale stretching. In consequence, straight contours occurring at small scales, typically with σ near 1 or 2, will be particularly highlighted or smoothed. As the morphological gradient retained only the difference of maximum and minimum values, the highlighting effect is dominant in the contrast gain measure.

Each one of the four methods has its own advantages. In a general use, without a priori knowledge of the image, Equalization is the contrast enhancement method we recommend because it is fast and independent of any parameter; but when you wish to direct the frequencies to be enhanced, choosing σ, our approach is optimal. Applying an equalization after our method has no interest; but, one can apply our method on an equalized image, it always bring about contrast gain and slope increase, therefore, the proposed method is efficient in all cases.

Note that the Beghdadi and Le Negrate [11] approach to contrast is radically different. They do not use it as an evaluation of the results, but to determine the gray-level increase (or decrease) on either side of the contour position. Results of their method are similar to ours because the two underlying fundamental steps are identical: (i) a method which is discriminant to contour position and (ii) an enhancement which highlights the gray-level difference between the analyzed pixel and the contour level. The main differences are a parametrization more complicated to manage than ours and the classical differences which can be expected between a nonlinear method and a linear Gaussian smoothed one, i.e., a greater sensitivity to noise and overlapping textures than ours, but less delocalization at higher scales.

VII. CONCLUSION AND FURTHER INVESTIGATIONS

We have proposed a powerful local contrast enhancement method which is complementary to the histogram modification type. It is based on the subtraction from the image of a multiple of the Laplacian-of-a-Gaussian of the image. Two main parameters control the enhancement:

7. K. R. Castleman, *Digital Image Processing*. Prentice–Hall Signal Processing Series, Englewood Cliffs, NJ, 1979.

8. M. P. Ekstrom, *Digital Image Processing Techniques*, Academic Press, London, 1984.

9. D. Blostein and N. Ahuja, A multiscale region detector, *Comput. Vision Graphics Image Process.* **45**, 1989, 22–41.

10. M. Shah, A. Sood, and R. Jain, Pulse and staircase edge models, *Comput. Vision Graphics Image Process.* **34**, 1986, 321–343.

11. A. Beghdadi and A. Le Negrate, Contrast enhancement technique based on local detection of edges, *Comput. Vision Graphics Image Process.* **46**, 1989, 162–174.

12. V. Berzins, Accuracy of Laplacian edge detectors, *Comput. Vision Graphics Image Process.* **27**, 1984, 195–210.

13. A. Witkin, Scale-space filtering, in *Proceedings of the International Joint Conference on Artificial Intelligence, Karlsruhe, Germany*, 1983, pp. 1019–1021.

14. D. C. C. Wang, A. H. Vagnucci, and C. C. Li, Digital image enhancement: A survey, *Comput. Vision Graphics Image Process.* **24**, 1983, 363–381.

15. E. L. Hall, R. P. Kruger, S. J. Dwyer, D. C. Hall, R. W. MacLaren, and G. S. Lodwick, A survey of preprocessing and feature extraction techniques for radiographic images, *IEEE Trans. Comput.* **C-20** (9), 1971, 1032–1044.

16. F. Meyer, *Thèse de Docteur-Ingénieur*, Ecole Nationale Supérieure des Mines de Paris, 1979.

17. M. Coster et J. L. Chermant, *Précis d'analyse d'images*, Presses du CNRS, Paris, 1985.

the scale σ and the display factor β. Frequencies to be enhanced are directly related to the scale. As the main applications of local contrast enhancement concern deblurring, small or medium scales are involved. The coefficient β determines the strength of the enhancement: with a high value, the result tends to a binarization. The proposed method uses the Laplacian-of-a-Gaussian and is time saving relative to the one involved in the edge-detection scheme. The major reason is that the size of the kernel convolution required never exceeds 3σ and can be taken to 2σ ($(4\sigma + 1) \times (4\sigma + 1)$ mask). Another reason is the fact that the major interest deals with the use of small σ to respect contour localization. A valuation framework based on a contrast gain measure and a slope increase measure has been proposed.

Some of our further works are mainly concerned with the use of the Fourier transform. In LoG convolution, the Fourier transform has the advantages of avoiding sampling and image border problems. It saves computational time when several convolutions at different scales are to be performed on the same image, especially for medium or high values of σ. As our wish is to try to quantify the factor β, we are examining a Fourier analysis of the image before any other processing step. We are also investigating a multiscale method.

Away from any theoretical consideration on contrast measures, we recommend implementation of our method and examination of the results. As many users have already implemented the Marr–Hildreth edge-detection technique, they may easily add our method of contrast enhancement.

APPENDIX: IMAGE BORDERS AND COMPUTATIONAL CONSIDERATIONS

(a) *Image Borders*

Discrete convolution in a bounded image poses the problem of the image's borders. It is necessary to have a $M \times M$ window around any pixel, in consequence, the strips of size h limiting the image can not be classically processed. To treat these strips, two different attitudes can come in mind:

—We can consider the transformation to be identical for each pixel. To do that we would have to enlarge artificially the original image. Such an attitude adapts the image to the filter. It implies extrapolations of the original image.

—The second attitude consists in considering the image as an entire entity, and so, adapt the filter to the image.

We choose the second solution, because many images which we encountered were not open to extrapolations, and because in digital image processing, the object is the image, not the filter.

(b) *Computation of the* LoG *Filter*

The filter has been computed using its property of isotropy, and following exactly the formula (4). It is stored in a real 4_bytes_coded array. The program asks the user σ and h, calculates k and asks for confirmation of the parameters, then the array filter is calculated.

(c) *Image Parameters and Outputs*

After the filter computation, the program asks the user, if he wants to treat the borders of the image or not, then the scaling factor β and the name of the original image. Finally, it asks which image files are to be built:

—Smoothed image $G * I$

—Opposite of the Laplacian of Gaussian image multiplied by β: $-\beta L = -\beta \cdot \text{LoG} * I$

—Enhanced image $I - \beta L$

—Enhanced smoothing $G * I - \beta L$

To simplify the presentation in our paper, all of our results are enhanced images, never enhanced smoothing.

(d) *Display Specifications for the Convolution*

A shift of 128 is done for display of the $-\beta L$ image.

β cannot be increased infinitely (>100), if not, you will rapidly have overflows (even with double precision calculations, and specially if the image contains deep and sharp edges!).

(e) *Processing the Borders*

If processing is demanded for the borders of the image, it is done at the end of the general convolution, just before the construction of the image file. For any different configuration of neighbouring pixels the sums of positive and negative involved filter coefficients are calculated. Then the positive coefficients are normalized so that their sum, added to the negative one, equals zero.

ACKNOWLEDGMENTS

Special thanks to Ian Bell and Henri Dupoisot.

REFERENCES

1. D. Marr and E. Hildreth, Theory of edge detection, *Proc. Roy. Soc. London Ser. B* 207, 1980, 187–217.
2. B. S. Lipkin and A. Rosenfeld, *Picture Processing and Psychopictorics*, Academic Press, London, 1970.
3. A. Rosenfeld and A. C. Kak, *Digital Picture Processing*, 2nd ed., Academic Press, London/New York, 1982.
4. R. C. Gonzalez and P. Wintz, *Digital Image Processing*, Addison–Wesley, London, 1977.
5. W. K. Pratt, *Digital Image Processing*, Wiley–Interscience, New York, 1978.
6. A. Bijaoui, *Image et Information*, Masson, Paris, 1984.

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File  95:TEME-Technology & Management 1989-2004/Jun W1
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File 103:Energy SciTec 1974-2004/Jul B2
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File 202:Info. Sci. & Tech. Abs. 1966-2004/Jul 12
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File 696:DIALOG Telecom. Newsletters 1995-2004/Aug 09
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         (c) 2004 Institution of Electrical Engineers
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File   8:Ei Compendex(R) 1970-2004/Aug W1
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File  65:Inside Conferences 1993-2004/Aug W2
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File 103:Energy SciTec 1974-2004/Jul B2
         (c) 2004 Contains copyrighted material
File 144:Pascal 1973-2004/Aug W1
         (c) 2004 INIST/CNRS
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File 647:CMP  Computer Fulltext 1988-2004/Aug W1
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File 696:DIALOG Telecom. Newsletters 1995-2004/Aug 09
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S2          1   S1 NOT PY>1995
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File   6:NTIS 1964-2004/Aug W2
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File  34:SciSearch(R) Cited Ref Sci 1990-2004/Aug W1
         (c) 2004 Inst for Sci Info
File  35:Dissertation Abs Online 1861-2004/May
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         (c)2004 Japan Science and Tech Corp(JST)
File  95:TEME-Technology & Management 1989-2004/Jun W1
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File  99:Wilson Appl. Sci & Tech Abs 1983-2004/Jul
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File 103:Energy SciTec 1974-2004/Jul B2
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File 144:Pascal 1973-2004/Aug W1
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File 202:Info. Sci. & Tech. Abs. 1966-2004/Jul 12
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File 275:Gale Group Computer DB(TM) 1983-2004/Aug 10
         (c) 2004 The Gale Group
File 647:CMP  Computer Fulltext 1988-2004/Aug W1
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File 696:DIALOG Telecom. Newsletters 1995-2004/Aug 09
         (c) 2004 The Dialog Corp.
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2/5/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

02257026 INSPEC Abstract Number: B84031530
Title: A security printers application of lasers
Author(s): Schell, K.J.
Author Affiliation: Joh. Enschede & Sons, Haarlem, Netherlands
Journal: Proceedings of the SPIE - The International Society for Optical Engineering vol.396 p.131-40
Publication Date: 1983 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
Conference Title: Advances in Laser Scanning and Recording
Conference Sponsor: SPIE
Conference Date: 19-20 April 1983 Conference Location: Geneva, Switzerland
Language: English Document Type: Conference Paper (PA); Journal Paper (JP)
Treatment: Applications (A); Practical (P)
Abstract: The author briefly summarises the known industrial applications of lasers in the graphic industries and reports about the applications of lasers in the detection of a coded watermark. A step and repeat holographic laser camera for the production of holograms in dichromatic gelatine is described. (6 Refs)
Subfile: B
Descriptors: holography; laser beam applications; printers
Identifiers: industrial application; coded **watermark detection** ; security printers application; lasers; graphic industries; step and repeat holographic laser camera; dichromatic gelatine
Class Codes: B4350 (Holography); B4360 (Laser applications)

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See enclosure 1

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(c) 2003 Dialog & SnapNames. All rts. reserv.

177315512 Record Date: 20020926
TYPE : WhoIs
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digital-watermark.com
REGISTRAR: NetworkSolutions, Inc.
Technical Contact
*NAME : Caine, Stephen H
*ADDR : 1010 E UNION ST STE 205
PASADENA, CA 91106-1756
US
Name Servers
ns.cfg.com - 192.84.10.3
ns2.gatekeeper.com - 192.84.10.10

Wistaria Trading Inc.

1/5,K/2 **(Item 1 from file: 345)**
DIALOG(R)File 345:Inpadoc/Fam.& Legal Stat
(c) 2004 EPO. All rts. reserv.

16894890
Basic Patent (No,Kind,Date): WO 9802864 A1 19980122 <No. of Patents: 010>

PATENT FAMILY:
AUSTRALIA (AU)
Patent (No,Kind,Date): AU 9735881 A1 19980209
OPTIMIZATION METHODS FOR THE INSERTION, PROTECTION AND DETECTION OF DIGITAL WATERMARKS IN DIGITIZED DATA (English)
Patent Assignee: DICE COMPANY
Author (Inventor): MOSKOWITZ SCOTT A; COOPERMAN MARC S
Priority (No,Kind,Date): US 677435 A 19960702; WO 97US11455 W 19970702
Applic (No,Kind,Date): AU 9735881 A 19970702
IPC: * G09C-005/00; H04L-009/00
Derwent WPI Acc No: * G 98-110853
Language of Document: English
Patent (No,Kind,Date): AU 200120659 A5 20010618
SYSTEMS, METHODS AND DEVICES FOR TRUSTED TRANSACTIONS (English)
Patent Assignee: BLUE SPIKE INC
Author (Inventor): MOSKOWITZ SCOTT A
Priority (No,Kind,Date): US 169274 P 19991207; US 456319 A 19991208; US 545589 A 20000407; US 594719 A 20000616; WO 2000US21189 A 20000804; US 657181 A 20000907; US 234199 P 20000920; US 671739 A 20000929; WO 2000US33126 W 20001207
Applic (No,Kind,Date): AU 200120659 A 20001207
IPC: * G06F-017/60
Language of Document: English

UNITED STATES OF AMERICA (US)
Patent (No,Kind,Date): US 5889868 A 19990330
OPTIMIZATION METHODS FOR THE INSERTION, PROTECTION, AND DETECTION OF DIGITAL WATERMARKS IN DIGITIZED DATA (English)
Patent Assignee: DICE COMPANY (US)
Author (Inventor): MOSKOWITZ SCOTT A (US); COOPERMAN MARC (US)
Priority (No,Kind,Date): US 677435 A 19960702
Applic (No,Kind,Date): US 677435 A 19960702
National Class: * 380051000; 380004000
IPC: * H04L-009/00
Derwent WPI Acc No: * G 98-110853
Language of Document: English
Patent (No,Kind,Date): US 20010029580 AA 20011011
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Patent Assignee: MOSKOWITZ SCOTT A (US)
Author (Inventor): MOSKOWITZ SCOTT A (US)
Priority (No,Kind,Date): US 789711 A 20010222; US 281279 A2 19990330; US 677435 A1 19960702; US 169274 P 19991207; US 234199 P 20000920
Applic (No,Kind,Date): US 789711 A 20010222
Addnl Info: 5889868 Patented
National Class: * 713176000
IPC: * H04L-009/00
Derwent WPI Acc No: * G 98-110853; G 01-381830
Language of Document: English

Patent (No,Kind,Date): US 20020010684 AA 20020124
SYSTEMS, METHODS AND DEVICES FOR TRUSTED TRANSACTIONS (English)
Patent Assignee: MOSKOWITZ SCOTT A (US)
Author (Inventor): MOSKOWITZ SCOTT A (US)
Priority (No,Kind,Date): US 731040 A 20001207; WO 2000US21189 W 20000804; US 169274 P 19991207; US 234199 P 20000920
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National Class: * 705075000; 713176000
IPC: * H04L-009/00
Derwent WPI Acc No: * G 01-381830; G 01-464789
Language of Document: English

Patent (No,Kind,Date): US 20020056041 AA 20020509
SECURITY BASED ON SUBLIMINAL AND SUPRALIMINAL CHANNELS FOR DATA OBJECTS (English)
Patent Assignee: MOSKOWITZ SCOTT A (US)
Author (Inventor): MOSKOWITZ SCOTT A (US)
Priority (No,Kind,Date): US 956262 A 20010920; US 234199 P 20000920
Applic (No,Kind,Date): US 956262 A 20010920
National Class: * 713176000
IPC: * H04L-009/00
Derwent WPI Acc No: * G 01-381830
Language of Document: English

Patent (No,Kind,Date): US 20030219143 AA 20031127
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Patent Assignee: MOSKOWITZ SCOTT A (US); COOPERMAN MARC S (US)
Author (Inventor): MOSKOWITZ SCOTT A (US); COOPERMAN MARC S (US)
Priority (No,Kind,Date): US 369344 A 20030218; US 281279 A2 19990330; US 677435 A1 19960702
Applic (No,Kind,Date): US 369344 A 20030218
Addnl Info: 6522767 Patented; 5889868 Patented
National Class: * 382100000
IPC: * G06K-009/00
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Language of Document: English

Patent (No,Kind,Date): US 6522767 BA 20030218
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Patent Assignee: WISTARIA TRADING INC (US)
Author (Inventor): MOSKOWITZ SCOTT A (US); COOPERMAN MARC (US)
Priority (No,Kind,Date): US 281279 A 19990330; US 677435 A1 19960702
Applic (No,Kind,Date): US 281279 A 19990330
Addnl Info: 5889868 Patented
National Class: * 382100000; 713176000
IPC: * G06K-009/00
Derwent WPI Acc No: * G 98-110853
Language of Document: English

WORLD INTELLECTUAL PROPERTY ORGANIZATION, PCT (WO)

Patent (No,Kind,Date): WO 9802864 A1 19980122
OPTIMIZATION METHODS FOR THE INSERTION, PROTECTION AND DETECTION OF DIGITAL WATERMARKS IN DIGITIZED DATA (English)
Patent Assignee: DICE COMPANY (US)

Author (Inventor): MOSKOWITZ SCOTT A; COOPERMAN MARC S
Priority (No,Kind,Date): US 677435 A 19960702
Applic (No,Kind,Date): WO 97US11455 A 19970702
Designated States: (National) AU; BR; CN; JP; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM (Regional) AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE
Filing Details: WO 130000 With international search report; Before expiration of time limit for amending the claims and to be republished in the event of the receipt of the amendments
IPC: * G09C-005/00; H04L-009/00
Derwent WPI Acc No: * G 98-110853; G 98-110853
Language of Document: English

Patent (No,Kind,Date): WO 200143026 A1 20010614
SYSTEMS, METHODS AND DEVICES FOR TRUSTED TRANSACTIONS (English)
Patent Assignee: BLUE SPIKE INC (US); MOSKOWITZ SCOTT A (US)
Author (Inventor): MOSKOWITZ SCOTT A (US)
Priority (No,Kind,Date): US 169274 P 19991207; US 456319 A 19991208; US 545589 A 20000407; US 594719 A 20000616; WO 2000US21189 W 20000804; US 657181 A 20000907; US 234199 P 20000920; US 671739 A 20000929
Applic (No,Kind,Date): WO 2000US33126 A 20001207
Designated States: (National) AE; AG; AL; AM; AT; AU; AZ; BA; BB; BG; BR; BY; BZ; CA; CH; CN; CR; CU; CZ; DE; DK; DM; DZ; EE; ES; FI; GB; GD; GE; GH; GM; HR; HU; ID; IL; IN; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; LS; LT; LU; LV; MA; MD; MG; MK; MN; MW; MX; MZ; NO; NZ; PL; PT; RO; RU; SD; SE; SG; SI; SK; SL; TJ; TM; TR; TT; TZ; UA; UG; US; UZ; VN; YU; ZA; ZW (Regional) GH; GM; KE; LS; MW; MZ; SD; SL; SZ; TZ; UG; ZW; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM; AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE; TR; BF; BJ; CF; CG; CI; CM; GA; GN; GW; ML; MR; NE; SN; TD; TG
Filing Details: WO 130000 With international search report; Before expiration of time limit for amending the claims and to be republished in the event of the receipt of the amendments
IPC: * G06F-017/60
Derwent WPI Acc No: * G 01-381830; G 01-464789; G 01-381830
Language of Document: English

Dialog File: Inpadoc/Fam.& Legal Stat_1968-2004/UD=200431

1/5,K/3 (Item 2 from file: 345)
DIALOG(R)File 345:Inpadoc/Fam.& Legal Stat

13793767
Basic Patent (No,Kind,Date): WO 9726733 A1 19970724 <No. of Patents: 004>

PATENT FAMILY:
AUSTRALIA (AU)
Patent (No,Kind,Date): AU 9718295 A1 19970811
METHOD FOR AN ENCRYPTED DIGITAL WATERMARK (English)
Patent Assignee: DICE COMPANY
Author (Inventor): COOPERMAN MARC; MOSKOWITZ SCOTT A
Priority (No,Kind,Date): US 587944 A 19960117; WO 97US652 W 19970117
Applic (No,Kind,Date): AU 9718295 A 19970116
IPC: * H04L-009/00
Language of Document: English

UNITED STATES OF AMERICA (US)
Patent (No,Kind,Date): US 5822432 A 19981013
Method for human-assisted random key generation and application for digital watermark system (English)
Patent Assignee: DICE COMPANY (US)
Author (Inventor): MOSKOWITZ SCOTT A (US); COOPERMAN MARC (US)
Priority (No,Kind,Date): US 587944 A 19960117

Applic (No,Kind,Date): US 587944 A 19960117
National Class: * 380028000; 380046000; 380054000
IPC: * H04L-009/00
Language of Document: English
Patent (No,Kind,Date): US 5905800 A 19990518
METHOD AND SYSTEM FOR DIGITAL WATERMARKING (English)
Patent Assignee: DICE COMPANY (US)
Author (Inventor): MOSKOWITZ SCOTT A (US); COOPERMAN MARC (US)
Priority (No,Kind,Date): US 47448 A 19980325; US 587944 A1 19960117
Applic (No,Kind,Date): US 47448 A 19980325
Addnl Info: 5822432 Patented
National Class: * 380028000; 380004000; 380030000
IPC: * H04L-009/00
Derwent WPI Acc No: * G 97-385616
Language of Document: English

WORLD INTELLECTUAL PROPERTY ORGANIZATION, PCT (WO)
Patent (No,Kind,Date): WO 9726733 A1 19970724
METHOD FOR AN ENCRYPTED DIGITAL WATERMARK PROCEDE RELATIF A UN FILIGRANE NUMERIQUE CODE (English)
Patent Assignee: DICE COMPANY (US)
Author (Inventor): COOPERMAN MARC; MOSKOWITZ SCOTT A
Priority (No,Kind,Date): US 587944 A 19960117
Applic (No,Kind,Date): WO 97US652 A 19970117
Designated States: (National) AL; AU; BA; BB; BG; BR; CA; CN; CU; CZ; EE; GE; HU; IL; IS; JP; KP; KR; LC; LK; LR; LT; LV; MG; MK; MN; MX; NO; NZ; PL; RO; SG; SI; SK; TR; TT; UA; UZ; VN; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM (Regional) KE; LS; MW; SD; SZ; UG; AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE; BF; BJ; CF; CG; CI; CM; GA; GN; ML; MR; NE; SN; TD; TG
Filing Details: WO 130000 With international search report; Before expiration of time limit for amending the claims and to be republished in the event of the receipt of the amendments
IPC: * H04L-009/00
Language of Document: English

Dialog File: Inpadoc/Fam.& Legal Stat_1968-2004/UD=200431

1/5,K/4 (Item 3 from file: 345)
DIALOG(R)File 345:Inpadoc/Fam.& Legal Stat

13793766
Basic Patent (No,Kind,Date): WO 9726732 A1 19970724 <No. of Patents: 005>

PATENT FAMILY:
AUSTRALIA (AU)
Patent (No,Kind,Date): AU 9718294 A1 19970811
METHOD FOR STEGA-CIPHER PROTECTION OF COMPUTER CODE (English)
Patent Assignee: DICE COMPANY
Author (Inventor): MOSKOWITZ SCOTT A; COOPERMAN MARC
Priority (No,Kind,Date): US 587943 A 19960117; WO 97US651 W 19970116
Applic (No,Kind,Date): AU 9718294 A 19970116
IPC: * H04L-009/00
Language of Document: English

UNITED STATES OF AMERICA (US)
Patent (No,Kind,Date): US 5745569 A 19980428
Method for stega-cipher protection of computer code (English)
Patent Assignee: DICE COMPANY (US)
Author (Inventor): MOSKOWITZ SCOTT A (US); COOPERMAN MARC (US)
Priority (No,Kind,Date): US 587943 A 19960117
Applic (No,Kind,Date): US 587943 A 19960117

National Class: * 380004000; 380023000; 380025000; 380028000; 380049000; 380050000; 380054000
IPC: * H04L-009/00
Language of Document: English

Patent (No,Kind,Date): US 20040086119 AA 20040506
Method for combining transfer functions with predetermined key creation (English)
Patent Assignee: MOSKOWITZ SCOTT A (US)
Author (Inventor): MOSKOWITZ SCOTT A (US)
Priority (No,Kind,Date): US 602777 A 20030625; US 46627 A1 19980324; US 587943 A1 19960117
Applic (No,Kind,Date): US 602777 A 20030625
Addnl Info: 6598162 Patented; 5745569 Patented
National Class: * 380205000; 380202000; 705058000
IPC: * H04N-007/167; H04L-009/00
Derwent WPI Acc No: ; C 97-385615
Language of Document: English

Patent (No,Kind,Date): US 6598162 BA 20030722
Method for combining transfer functions with predetermined key creation (English)
Patent Assignee: MOSKOWITZ SCOTT A (US)
Author (Inventor): MOSKOWITZ SCOTT A (US)
Priority (No,Kind,Date): US 46627 A 19980324; US 587943 A2 19960117
Applic (No,Kind,Date): US 46627 A 19980324
Addnl Info: 5745569 Patented
National Class: * 713176000; 380046000; 708254000
IPC: * H04L-009/00; G06F-001/02; G06F-007/58
Derwent WPI Acc No: ; C 03-719787
Language of Document: English

WORLD INTELLECTUAL PROPERTY ORGANIZATION, PCT (WO)

Patent (No,Kind,Date): WO 9726732 A1 19970724
METHOD FOR STEGA-CIPHER PROTECTION OF COMPUTER CODE PROCEDE DE PROTECTION DE CODE INFORMATIQUE PAR CRYPTAGE STEGA (English)
Patent Assignee: DICE COMPANY (US)
Author (Inventor): MOSKOWITZ SCOTT A; COOPERMAN MARC
Priority (No,Kind,Date): US 587943 A 19960117
Applic (No,Kind,Date): WO 97US651 A 19970116
Designated States: (National) AL; AU; BA; BB; BG; BR; CA; CN; CU; CZ; EE; GE; HU; IL; IS; JP; KP; KR; LC; LK; LR; LT; LV; MG; MK; MN; MX; NO; NZ; PL; RO; SG; SI; SK; TR; TT; UA; UZ; VN; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM (Regional) KE; LS; MW; SD; SZ; UG; AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE; BF; BJ; CF; CG; CI; CM; GA; GN; ML; MR; NE; SN; TD; TG
Filing Details: WO 100000 With international search report
IPC: * H04L-009/00
Language of Document: English

Dialog File: Inpadoc/Fam.& Legal Stat_1968-2004/UD=200431

1/5,K/5 (Item 4 from file: 345)

DIALOG(R)File 345:Inpadoc/Fam.& Legal Stat

13419423
Basic Patent (No,Kind,Date): WO 9642151 A2 19961227 <No. of Patents: 006>

PATENT FAMILY:
EUROPEAN PATENT OFFICE (EP)

Patent (No,Kind,Date): EP 872073 A2 19981021
STEGANOGRAPHIC METHOD AND DEVICE PROCEDE ET DISPOSITIF STEGANOGRAPHIQUES STEGANOGRAPHISCHES VERFAHREN UND EINRICHTUNG (English; French; German)
Patent Assignee: DICE COMPANY (US)

Author (Inventor): COOPERMAN MARC S (US); MOSKOWITZ SCOTT A (US)
Priority (No,Kind,Date): WO 96US10257 W 19960607; US 489172 A 19950607
Applic (No,Kind,Date): EP 96919405 A 19960607
Designated States: (National) AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
IPC: * H04L-009/00; H04N-001/32
Language of Document: English

Patent (No,Kind,Date): EP 872073 A4 20040428
STEGANOGRAPHIC METHOD AND DEVICE PROCEDE ET DISPOSITIF STEGANOGRAPHIQUES STEGANOGRAPHISCHES VERFAHREN UND EINRICHTUNG (English; French; German)
Patent Assignee: WISTARIA TRADING INC (US)
Author (Inventor): COOPERMAN MARC S (US); MOSKOWITZ SCOTT A (US)
Priority (No,Kind,Date): WO 96US10257 W 19960607; US 489172 A 19950607
Applic (No,Kind,Date): EP 96919405 A 19960607
Designated States: (National) AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
IPC: * H04L-009/00; H04N-001/32
Language of Document: English

UNITED STATES OF AMERICA (US)

Patent (No,Kind,Date): US 5613004 A 19970318
Steganographic method and device (English)
Patent Assignee: DICE COMPANY (US)
Author (Inventor): COOPERMAN MARC (US); MOSKOWITZ SCOTT A (JP)
Priority (No,Kind,Date): US 489172 A 19950607
Applic (No,Kind,Date): US 489172 A 19950607
National Class: * 380028000; 380004000
IPC: * H04L-009/20
Language of Document: English

Patent (No,Kind,Date): US 5687236 A 19971111
Steganographic method and device (English)
Patent Assignee: DICE COMPANY (US)
Author (Inventor): MOSKOWITZ SCOTT A (JP); COOPERMAN MARC (US)
Priority (No,Kind,Date): US 775216 A 19961231; US 489172 A1 19950607
Applic (No,Kind,Date): US 775216 A 19961231
Addnl Info: 5613004 Patented
National Class: * 380028000; 004054000
IPC: * H04L-009/00
Language of Document: English

WORLD INTELLECTUAL PROPERTY ORGANIZATION, PCT (WO)

Patent (No,Kind,Date): WO 9642151 A2 19961227
STEGANOGRAPHIC METHOD AND DEVICE PROCEDE ET DISPOSITIF STEGANOGRAPHIQUES (English)
Patent Assignee: DICE COMPANY (US)
Author (Inventor): COOPERMAN MARC S; MOSKOWITZ SCOTT A
Priority (No,Kind,Date): US 489172 A 19950607
Applic (No,Kind,Date): WO 96US10257 A 19960607
Designated States: (National) CA; CN; FI; JP; KR; SG (Regional) AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE
Filing Details: WO 300000 Without international search report and to be republished upon receipt of that report
IPC: * H04L
Language of Document: English

Patent (No,Kind,Date): WO 9642151 A3 19970213
STEGANOGRAPHIC METHOD AND DEVICE (English)
Patent Assignee: DICE COMPANY (US)
Author (Inventor): COOPERMAN MARC S; MOSKOWITZ SCOTT A
Priority (No,Kind,Date): US 489172 A 19950607
Applic (No,Kind,Date): WO 96US10257 A 19960607
IPC: * H04L
Language of Document: English

Dialog File: Inpadoc/Fam.& Legal Stat_1968-2004/UD=200431

1/5,K/6 (Item 5 from file: 345)
DIALOG(R)File 345:Inpadoc/Fam.& Legal Stat

12497809
Basic Patent (No,Kind,Date): US 5428606 A 19950627 <No. of Patents: 003>

PATENT FAMILY:
UNITED STATES OF AMERICA (US)
Patent (No,Kind,Date): US 5428606 A 19950627
DIGITAL INFORMATION COMMODITIES EXCHANGE (English)
Patent Assignee: MOSKOWITZ SCOTT A (JP)
Author (Inventor): MOSKOWITZ SCOTT A (JP)
Priority (No,Kind,Date): US 83593 A 19930630
Applic (No,Kind,Date): US 83593 A 19930630
National Class: * 370060000; 370094100
IPC: * H04L-012/56
Derwent WPI Acc No: * G 95-240263; G 96-354144; G 97-100394; G 95-240263
Language of Document: English
Patent (No,Kind,Date): US 5539735 A 19960723
DIGITAL INFORMATION COMMODITIES EXCHANGE Digital information commodities exchange (English)
Patent Assignee: MOSKOWITZ SCOTT A (JP)
Author (Inventor): MOSKOWITZ SCOTT A (JP)
Priority (No,Kind,Date): US 365454 A 19941228; US 83593 A1 19930630
Applic (No,Kind,Date): US 365454 A 19941228
Addnl Info: 5428606 Patented
National Class: * 370060000; 375260000; 348010000; 370094100
IPC: * H04J-003/26
Derwent WPI Acc No: * G 95-240263; G 96-354144; G 97-100394; G 96-354144
Language of Document: English

WORLD INTELLECTUAL PROPERTY ORGANIZATION, PCT (WO)
Patent (No,Kind,Date): WO 9701892 A1 19970116
DIGITAL INFORMATION COMMODITIES EXCHANGE WITH VIRTUAL MENUING (English)
Patent Assignee: MOSKOWITZ SCOTT A (US)
Author (Inventor): MOSKOWITZ SCOTT A (US)
Priority (No,Kind,Date): US 83593 A 19930630
Applic (No,Kind,Date): WO 95US8159 A 19950626
Designated States: (National) CA; CN; JP; KR; SG; US (Regional) AT; BE; CH; DE; DK; ES; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE
Filing Details: WO 100000 With international search report
IPC: * H04B-013/00; H04J-003/26; H04L-012/40
Derwent WPI Acc No: * G 95-240263; G 96-354144; G 97-100394; G 97-100394
Language of Document: English

Dialog File: Inpadoc/Fam.& Legal Stat_1968-2004/UD=200431

1/5,K/7 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00830913
STEGANOGRAPHIC METHOD AND DEVICE
STEGANOGRAPHISCHES VERFAHREN UND EINRICHTUNG
PROCEDE ET DISPOSITIF STEGANOGRAPHIQUES
PATENT ASSIGNEE:

• The Dice Company, (2256650), P.o. Box 60471, Palo Alto, CA 94306-0471, (US), (applicant designated states: AT;BE;CH;DE;DK;ES;FI;FR;GB;GR;IE;IT;LI;LU;MC;NL;PT;SE)
INVENTOR:
COOPERMAN, Marc, S., 2929 Ramona, Palo Alto, CA 94306, (US)
MOSKOWITZ, Scott, A., Townhouse 4 20191 East Country Club Drive, North Miami Beach, FL 33180, (US)
LEGAL REPRESENTATIVE:
VOSSIUS & PARTNER (100314), Siebertstrasse 4, 81675 Munchen, (DE)
PATENT (CC, No, Kind, Date): EP 872073 A2 981021 (Basic)
WO 9642151 961227
APPLICATION (CC, No, Date): EP 96919405 960607; WO 96US10257 960607
PRIORITY (CC, No, Date): US 489172 950609
DESIGNATED STATES: AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
INTERNATIONAL PATENT CLASS: H04L-009/00;
NOTE:
No A-document published by EPO
LEGAL STATUS (Type, Pub Date, Kind, Text):
Search Report: 040428 A2 Date of drawing up and dispatch of supplementary:search report 20040316
Assignee: 20000216 A2 Transfer of rights to new applicant: **Wistaria Trading** , Inc. (2917420) 16771 Collins Avenue, Suite 2505 Miami, Florida 33160 US
Change: 040428 A2 International Patent Classification changed: 20040310
Change: 040428 A2 International Patent Classification changed: 20040310
Application: 970423 A2 International application (Art. 158(1))
Application: 981021 A2 Published application (A1with Search Report ;A2without Search Report)
Examination: 981021 A2 Date of filing of request for examination: 980105
LANGUAGE (Publication,Procedural,Application): English; English; English

LEGAL STATUS (Type, Pub Date, Kind, Text):
... **Wistaria Trading** , Inc. (2917420) 16771 Collins Avenue, Suite 2505 Miami, Florida 33160 US
Change

1/5,K/8 (Item 1 from file: 416)
DIALOG(R)File 416:DIALOG COMPANY NAME FINDER(TM)
(c) 2004 DIALOG INFO.SVCS. All rts. reserv.

139948859
WISTARIA TRADING INC. (CO=)
DIALOG FILE 226: TRADEMARKSCAN(R)-US FED
(C) 2004 THOMSON & THOMSON
RECORDS AS OF 05/25/04: 3
TYPE OF DATA: Trademark

1/5,K/9 (Item 2 from file: 416)
DIALOG(R)File 416:DIALOG COMPANY NAME FINDER(TM)
(c) 2004 DIALOG INFO.SVCS. All rts. reserv.

137551952
WISTARIA TRADING, INC. 16771 COLLINS AVENUE #2 (CO=)
DIALOG FILE 123: CLAIMS(R)/CURRENT LEGAL STATUS
(C) 2004 IFI/CLAIMS
RECORDS AS OF 05/25/04: 3
TYPE OF DATA: Patent

1/5,K/10 (Item 3 from file: 416)

DIALOG(R)File 416:DIALOG COMPANY NAME FINDER(TM)
(c) 2004 DIALOG INFO.SVCS. All rts. reserv.

137551951
WISTARIA TRADING, INC. #2505 16711 COLLINS AVE (CO=)
DIALOG FILE 123: CLAIMS(R)/CURRENT LEGAL STATUS
(C) 2004 IFI/CLAIMS
RECORDS AS OF 05/25/04: 1
TYPE OF DATA: Patent

1/5,K/11 (Item 4 from file: 416)
DIALOG(R)File 416:DIALOG COMPANY NAME FINDER(TM)
(c) 2004 DIALOG INFO.SVCS. All rts. reserv.

137551950
WISTARIA TRADING, INC SUITE 2505 16771 COLLINS (CO=)
DIALOG FILE 123: CLAIMS(R)/CURRENT LEGAL STATUS
(C) 2004 IFI/CLAIMS
RECORDS AS OF 05/25/04: 5
TYPE OF DATA: Patent

1/5,K/12 (Item 5 from file: 416)
DIALOG(R)File 416:DIALOG COMPANY NAME FINDER(TM)
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137551949
WISTARIA TRADING, INC #2505 16771 COLLINS AVEN (CO=)
DIALOG FILE 123: CLAIMS(R)/CURRENT LEGAL STATUS
(C) 2004 IFI/CLAIMS
RECORDS AS OF 05/25/04: 3
TYPE OF DATA: Patent

1/5,K/13 (Item 6 from file: 416)
DIALOG(R)File 416:DIALOG COMPANY NAME FINDER(TM)
(c) 2004 DIALOG INFO.SVCS. All rts. reserv.

137551948
WISTARIA TRADING INC. 20191 EAST COUNTRY CLUB (CO=)
DIALOG FILE 123: CLAIMS(R)/CURRENT LEGAL STATUS
(C) 2004 IFI/CLAIMS
RECORDS AS OF 05/25/04: 6
TYPE OF DATA: Patent

1/5,K/14 (Item 7 from file: 416)
DIALOG(R)File 416:DIALOG COMPANY NAME FINDER(TM)
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137551947
WISTARIA TRADING INC (CO=)
DIALOG FILE 123: CLAIMS(R)/CURRENT LEGAL STATUS
(C) 2004 IFI/CLAIMS
RECORDS AS OF 05/25/04: 1
TYPE OF DATA: Patent

1/5,K/15 (Item 8 from file: 416)
DIALOG(R)File 416:DIALOG COMPANY NAME FINDER(TM)
(c) 2004 DIALOG INFO.SVCS. All rts. reserv.

136147024
WISTARIA TRADING, INC. 16771 COLLINS AVENUE #2 (CO=)
DIALOG FILE 654: US PAT.FULL.
(C) FORMAT ONLY 2004 THE DIALOG CORP.

RECORDS AS OF 05/25/04: 2
TYPE OF DATA: Patent

1/5,K/16 (Item 9 from file: 416)
DIALOG(R)File 416:DIALOG COMPANY NAME FINDER(TM)
(c) 2004 DIALOG INFO.SVCS. All rts. reserv.

136147023
WISTARIA TRADING, INC. #2505 16711 COLLINS AVE (CO=)
DIALOG FILE 654: US PAT.FULL.
(C) FORMAT ONLY 2004 THE DIALOG CORP.
RECORDS AS OF 05/25/04: 1
TYPE OF DATA: Patent

1/5,K/17 (Item 10 from file: 416)
DIALOG(R)File 416:DIALOG COMPANY NAME FINDER(TM)
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136147022
WISTARIA TRADING, INC SUITE 2505 16771 COLLINS (CO=)
DIALOG FILE 654: US PAT.FULL.
(C) FORMAT ONLY 2004 THE DIALOG CORP.
RECORDS AS OF 05/25/04: 5
TYPE OF DATA: Patent

1/5,K/18 (Item 11 from file: 416)
DIALOG(R)File 416:DIALOG COMPANY NAME FINDER(TM)
(c) 2004 DIALOG INFO.SVCS. All rts. reserv.

136147021
WISTARIA TRADING, INC #2505 16771 COLLINS AVEN (CO=)
DIALOG FILE 654: US PAT.FULL.
(C) FORMAT ONLY 2004 THE DIALOG CORP.
RECORDS AS OF 05/25/04: 3
TYPE OF DATA: Patent

1/5,K/19 (Item 12 from file: 416)
DIALOG(R)File 416:DIALOG COMPANY NAME FINDER(TM)
(c) 2004 DIALOG INFO.SVCS. All rts. reserv.

136147020
WISTARIA TRADING INC. 20191 EAST COUNTRY CLUB (CO=)
DIALOG FILE 654: US PAT.FULL.
(C) FORMAT ONLY 2004 THE DIALOG CORP.
RECORDS AS OF 05/25/04: 6
TYPE OF DATA: Patent

1/5,K/20 (Item 13 from file: 416)
DIALOG(R)File 416:DIALOG COMPANY NAME FINDER(TM)
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136147019
WISTARIA TRADING INC (CO=)
DIALOG FILE 654: US PAT.FULL.
(C) FORMAT ONLY 2004 THE DIALOG CORP.
RECORDS AS OF 05/25/04: 1
TYPE OF DATA: Patent

1/5,K/21 (Item 14 from file: 416)
DIALOG(R)File 416:DIALOG COMPANY NAME FINDER(TM)
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133815748
WISTARIA TRADING INC (CO=)
DIALOG FILE 351: DERWENT WPI
(C) 2004 THOMSON DERWENT
RECORDS AS OF 05/25/04: 1
TYPE OF DATA: Patent

1/5,K/22 (Item 15 from file: 416)
DIALOG(R)File 416:DIALOG COMPANY NAME FINDER(TM)
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131357055
WISTARIA TRADING INC (CO=)
DIALOG FILE 350: DERWENT WPIX
(C) 2004 THOMSON DERWENT
RECORDS AS OF 05/25/04: 1
TYPE OF DATA: Patent

1/5,K/23 (Item 16 from file: 416)
DIALOG(R)File 416:DIALOG COMPANY NAME FINDER(TM)
(c) 2004 DIALOG INFO.SVCS. All rts. reserv.

085848165
WISTARIA TRADING INC (PA=)
DIALOG FILE 340: CLAIMS(R)/US PATENT
(C) 2004 IFI/CLAIMS(R)
RECORDS AS OF 05/25/04: 1
TYPE OF DATA: Patent

1/5,K/24 (Item 1 from file: 531)
DIALOG(R)File 531:Amer. Bus. Directory
(c) 2004 American Business Information. All rts. reserv.

03174121
WISTARIA TRADING TOKYO

MIAMI, FL 33162
TELEPHONE: 305-956-9042
COUNTY: MIAMI DADE
MSA: 5000 (MIAMI, FLORIDA)

INDUSTRY: WHOLESALE TRADE
PRIMARY SIC AND YELLOW PAGE PRODUCT LINE(S):
5099 (DURABLE GOODS NEC)
509901 (EXPORTERS)

EMPLOYEES AT THIS LOCATION: 3 (ESTIMATED)
LOCATION SALES($): 2,832,000

THIS LOCATION NUMBER: 988894184
LATEST UPDATE TO RECORD: 0405

Enclosure 1

1/9/1 (Item 1 from file: 225)
DIALOG(R)File 225:DIALOG(R):Domain Names 1997 - May. 2004

177315512 Record Date: 20020926
TYPE : WhoIs

Domain Information
digital-watermark.com
STATUS : Registered
REGISTRAR: NetworkSolutions, Inc.
EXPIRES : 20021214
CREATED : 19951213

Registrant Information
NAME : Wistaria Trading Inc.
*ADDR : C/O Wistaria Trading, Inc.
20191 East Country Club Drive Suite TH4
Aventura
FL,33180
US

Administrative Contact
NAME : Moskowitz, Scott
EMAIL: scott@BLUESPIKE.COM
ORG : The DICE Company
ADDR : 20191 East Country Club #TH4
Aventura, FL 33180
PHONE: (800) 381-8344

Technical Contact
*NAME : Caine, Stephen H
EMAIL: shc@CFG.COM
*ORG : Caine, Farber & Gordon, Inc.
*ADDR : 1010 E UNION ST STE 205
PASADENA, CA 91106-1756
US
PHONE: (626) 449-3070

Name Servers
ns.cfg.com - 192.84.10.3
ns2.gatekeeper.com - 192.84.10.10

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Set     Items   Description
S1        166   AU=(COOPERMAN, M? OR COOPERMAN M?)
S2          0   S1 AND (WATERMARK? OR WATER()MARK?)
File   2:INSPEC 1969-2004/Aug W1
         (c) 2004 Institution of Electrical Engineers
File   6:NTIS 1964-2004/Aug W2
         (c) 2004 NTIS, Intl Cpyrght All Rights Res
File   8:Ei Compendex(R) 1970-2004/Aug W1
         (c) 2004 Elsevier Eng.  Info. Inc.
File  34:SciSearch(R) Cited Ref Sci 1990-2004/Aug W1
         (c) 2004 Inst for Sci Info
File  35:Dissertation Abs Online 1861-2004/May
         (c) 2004 ProQuest Info&Learning
File  65:Inside Conferences 1993-2004/Aug W2
         (c) 2004 BLDSC all rts. reserv.
File  92:IHS Intl.Stds.& Specs. 1999/Nov
         (c) 1999 Information Handling Services
File  94:JICST-EPlus 1985-2004/Jul W3
         (c)2004 Japan Science and Tech Corp(JST)
File  95:TEME-Technology & Management 1989-2004/Jun W1
         (c) 2004 FIZ TECHNIK
File  99:Wilson Appl. Sci & Tech Abs 1983-2004/Jul
         (c) 2004 The HW Wilson Co.
File 103:Energy SciTec 1974-2004/Jul B2
         (c) 2004 Contains copyrighted material
File 144:Pascal 1973-2004/Aug W1
         (c) 2004 INIST/CNRS
File 202:Info. Sci. & Tech. Abs. 1966-2004/Jul 12
         (c) 2004 EBSCO Publishing
File 233:Internet & Personal Comp. Abs. 1981-2003/Sep
         (c) 2003 EBSCO Pub.
File 239:Mathsci 1940-2004/Sep
         (c) 2004 American Mathematical Society
File 275:Gale Group Computer DB(TM) 1983-2004/Aug 11
         (c) 2004 The Gale Group
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
         (c) 1998 Inst for Sci Info
File 647:CMP  Computer Fulltext 1988-2004/Aug W1
         (c) 2004 CMP Media, LLC
File 674:Computer News Fulltext 1989-2004/Jul W4
         (c) 2004 IDG Communications
File 696:DIALOG Telecom. Newsletters 1995-2004/Aug 10
         (c) 2004 The Dialog Corp.
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         (c) 2004 Institution of Electrical Engineers
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         (c) 2004 Elsevier Eng.  Info. Inc.
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         (c) 2004 Inst for Sci Info
File  35:Dissertation Abs Online 1861-2004/May
         (c) 2004 ProQuest Info&Learning
File  65:Inside Conferences 1993-2004/Aug W2
         (c) 2004 BLDSC all rts. reserv.
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         (c) 1999 Information Handling Services
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         (c)2004 Japan Science and Tech Corp(JST)
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         (c) 2004 FIZ TECHNIK
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File 103:Energy SciTec 1974-2004/Jul B2
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         (c) 2004 INIST/CNRS
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         (c) 2004 EBSCO Publishing
File 233:Internet & Personal Comp. Abs. 1981-2003/Sep
         (c) 2003 EBSCO Pub.
File 239:Mathsci 1940-2004/Sep
         (c) 2004 American Mathematical Society
File 275:Gale Group Computer DB(TM) 1983-2004/Aug 11
         (c) 2004 The Gale Group
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
         (c) 1998 Inst for Sci Info
File 647:CMP  Computer Fulltext 1988-2004/Aug W1
         (c) 2004 CMP Media, LLC
File 674:Computer News Fulltext 1989-2004/Jul W4
         (c) 2004 IDG Communications
File 696:DIALOG Telecom. Newsletters 1995-2004/Aug 10
         (c) 2004 The Dialog Corp.
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         (c) 2004 Elsevier Eng.  Info. Inc.
File  34:SciSearch(R) Cited Ref Sci 1990-2004/Aug W1
         (c) 2004 Inst for Sci Info
File  35:Dissertation Abs Online 1861-2004/May
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File  65:Inside Conferences 1993-2004/Aug W2
         (c) 2004 BLDSC all rts. reserv.
File  92:IHS Intl.Stds.& Specs. 1999/Nov
         (c) 1999 Information Handling Services
File  94:JICST-EPlus 1985-2004/Jul W3
         (c)2004 Japan Science and Tech Corp(JST)
File  95:TEME-Technology & Management 1989-2004/Jun W1
         (c) 2004 FIZ TECHNIK
File  99:Wilson Appl. Sci & Tech Abs 1983-2004/Jul
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File 103:Energy SciTec 1974-2004/Jul B2
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File 144:Pascal 1973-2004/Aug W1
         (c) 2004 INIST/CNRS
File 202:Info. Sci. & Tech. Abs. 1966-2004/Jul 12
         (c) 2004 EBSCO Publishing
File 233:Internet & Personal Comp. Abs. 1981-2003/Sep
         (c) 2003 EBSCO Pub.
File 239:Mathsci 1940-2004/Sep
         (c) 2004 American Mathematical Society
File 275:Gale Group Computer DB(TM) 1983-2004/Aug 11
         (c) 2004 The Gale Group
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
         (c) 1998 Inst for Sci Info
File 647:CMP  Computer Fulltext 1988-2004/Aug W1
         (c) 2004 CMP Media, LLC
File 674:Computer News Fulltext 1989-2004/Jul W4
         (c) 2004 IDG Communications
File 696:DIALOG Telecom. Newsletters 1995-2004/Aug 10
         (c) 2004 The Dialog Corp.
```

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Set     Items   Description
S1         46   AU='COOPERMAN M' OR AU='COOPERMAN MARC'
S2         40   S1 NOT AU=MOSKOWITZ S?
S3         12   S2 AND IC=H04L?
File 347:JAPIO Nov 1976-2004/Apr(Updated 040802)
         (c) 2004 JPO & JAPIO
File 348:EUROPEAN PATENTS 1978-2004/Aug W01
         (c) 2004 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20040805,UT=20040729
         (c) 2004 WIPO/Univentio
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200451
         (c) 2004  Thomson Derwent
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Set     Items   Description
S1         46   AU='COOPERMAN M' OR AU='COOPERMAN MARC'
S2         40   S1 NOT AU=MOSKOWITZ S?
S3         12   S2 AND IC=H04L?
File 347:JAPIO Nov 1976-2004/Apr(Updated 040802)
         (c) 2004 JPO & JAPIO
File 348:EUROPEAN PATENTS 1978-2004/Aug W01
         (c) 2004 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20040805,UT=20040729
         (c) 2004 WIPO/Univentio
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200451
         (c) 2004  Thomson Derwent
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Set     Items   Description
S1         46   AU='COOPERMAN M' OR AU='COOPERMAN MARC'
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File 347:JAPIO Nov 1976-2004/Apr(Updated 040802)
         (c) 2004 JPO & JAPIO
File 348:EUROPEAN PATENTS 1978-2004/Aug W01
         (c) 2004 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20040805,UT=20040729
         (c) 2004 WIPO/Univentio
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200451
         (c) 2004  Thomson Derwent
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3/5/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013933187 **Image available**
WPI Acc No: 2001-417401/200144
XRPX Acc No: N01-309297

Broad band data communication method for telephone network, involves connecting wire lines from central office to packet switch nodes at location near remote subscriber, for sending packets addressed to subscriber

Patent Assignee: GTE LAB INC (SYLV); VERIZON LAB INC (VERI-N)
Inventor: ARMIENTO C; **COOPERMAN M**

Number of Countries: 093 Number of Patents: 004
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200076098	A1	20001214	WO 2000US12519	A	20000508	200144	B
AU 200047071	A	20001228	AU 200047071	A	20000508	200144	
EP 1190514	A1	20020327	EP 2000928907	A	20000508	200229	
			WO 2000US12519	A	20000508		
US 6445712	B1	20020903	US 99330427	A	19990608	200260	

Priority Applications (No Type Date): US 99330427 A 19990608
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200076098	A1	E	21	H04J-003/02	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW

AU 200047071	A		H04J-003/02	Based on patent WO 200076098
EP 1190514	A1	E	H04J-003/02	Based on patent WO 200076098

Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI

US 6445712	B1		H04L-012/28	

Abstract (Basic): WO 200076098 A1

NOVELTY - Twisted pair wire lines are connected between central office (102) and location nearer to the remote subscriber. Several packet switch nodes (122,123,125) formed at the location proximal to the subscriber are networked with the twisted pair wire lines. The nodes have packet switch for identifying and sending packet addressed to particular subscriber. The nodes have splitters, ADSL or VDSL modem.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for broad band telephone network.

USE - For sending broad band data through telephone networks.

ADVANTAGE - Increased bandwidth as well as existing bandwidth can be utilized more efficiently. Installs packet switch node on subscriber's telephone pole and increases bandwidth due to sharing of twisted pairs.

DESCRIPTION OF DRAWING(S) - The figure shows the modified telephone network.

Central office (102)
Nodes (122,123,125)
pp; 21 DwgNo 3/5

Title Terms: BROAD; BAND; DATA; COMMUNICATE; METHOD; TELEPHONE; NETWORK; CONNECT; WIRE; LINE; CENTRAL; OFFICE; PACKET; SWITCH; NODE; LOCATE; REMOTE; SUBSCRIBER; SEND; PACKET; ADDRESS; SUBSCRIBER
Derwent Class: T01; W01
International Patent Class (Main): H04J-003/02; **H04L-012/28**
File Segment: EPI

3/5/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013110433 **Image available**
WPI Acc No: 2000-282304/200024
XRPX Acc No: N00-212460

Method for selectively coupling data signal received at first stage of multi-stage tree switch to output of last stage, involves time staggering of on-chip parallel control signals so that they track propagation of data bits

Patent Assignee: GTE LAB INC (SYLV)
Inventor: **COOPERMAN M**
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 6038229	A	20000314	US 97994285	A	19971219	200024	B

Priority Applications (No Type Date): US 97994285 A 19971219
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6038229	A		13	H04L-012/50	

Abstract (Basic): US 6038229 A

NOVELTY - Each stage of the tree switch is controlled by a control signal and its corresponding complement. The method involves storing the control signals and corresponding complements for all the stages in pairs of latches (505,510;515,520;525,530).

DETAILED DESCRIPTION - The reception of a control signal and its corresponding complementary control signal stored by one of the latch pairs is delayed, by means of delay gates (540-565), at a stage of the tree switch controlled by the stored control signals. The amount of delay is equal to the delay between a data signal being received at the first stage of the tree switch and the data signal being received at the stage controlled by the respective pair of latches.

USE - For selectively coupling a data signal received at the first stage of a multi-stage tree switch to an output of the last stage of the switch. For application in broadband switching and, in particular, to fast reconfiguration of packet switching and asynchronous transfer mode switching.

ADVANTAGE - Allows for the fast reconfiguration of tree switches. Because the control signals track the propagation of data or information bits, it is unnecessary to stop the flow of data bits from the data inputs to the data outputs during the reconfiguration of the tree switch.

DESCRIPTION OF DRAWING(S) - The drawing is a block diagram of a control circuit for the control signals applied to the tree switch.

Latches (505-530)
Delay gates (540-565)
pp; 13 DwgNo 5/11

Title Terms: METHOD; SELECT; COUPLE; DATA; SIGNAL; RECEIVE; FIRST; STAGE; TREE; SWITCH; OUTPUT; LAST; STAGE; TIME; STAGGER; PARALLEL; CONTROL; SIGNAL; SO; TRACK; PROPAGATE; DATA; BIT
Derwent Class: U21; W01; W02
International Patent Class (Main): **H04L-012/50**
International Patent Class (Additional): G01R-031/08; H01H-067/00; H04J-003/04
File Segment: EPI

3/5/3 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

012373425 **Image available**
WPI Acc No: 1999-179532/199915
XRPX Acc No: N99-131821

Distributed ATM switch buffer for data communication system

Patent Assignee: GTE LAB INC (SYLV)

Inventor: **COOPERMAN M** ; SIEBER R
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 5872787	A	19990216	US 96648371	A	19960515	199915	B

Priority Applications (No Type Date): US 96648371 A 19960515
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5872787	A		8	H04L-012/54	

Abstract (Basic): US 5872787 A

NOVELTY - Switch chips (6,8,10,12) are cascaded to form a stage (4), to which inputs (IN1-IN4) are applied. The output (14) of chips is applied to the switch chips (18,20,22,24) of stage (16). Similarly output (26) of stage (16) switch chips is applied to chips of stage (28). Based on availability of queue to received input packets, the switch chips varies number of packets output per time slot.

USE - For data communication system.

ADVANTAGE - Enables to increase size of switch buffer without redesigning either the overall switch or the specific switch chip used.

DESCRIPTION OF DRAWING(S) - The figure shows a logical block diagram of 4-input, 4-output, 3-stage distributed switch buffer.

Stages(6,8,10,12) First stage switch chips (4,16,28)
Second stage switch chips (18,20,22,24)
Output of second stage switch chips (26)
pp; 8 DwgNo 1/3

Title Terms: DISTRIBUTE; ATM; SWITCH; BUFFER; DATA; COMMUNICATE; SYSTEM
Derwent Class: W01
International Patent Class (Main): **H04L-012/54**
File Segment: EPI

3/5/4 (Item 4 from file: 350)
DIALOG(R)File 350:Derwent WPIX

011970499 **Image available**
WPI Acc No: 1998-387409/199833
XRPX Acc No: N98-302137

Circuit switch matrix with contending arbitration - has switching matrix which sorts out contending inputs to correct output port

Patent Assignee: GTE LAB INC (SYLV)
Inventor: **COOPERMAN M** ; GEE N; RATHKE J E
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 5774463	A	19980630	US 95581722	A	19951229	199833	B

Priority Applications (No Type Date): US 95581722 A 19951229
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5774463	A		14	H04L-012/50	

Abstract (Basic): US 5774463 A

The circuit switch device includes a storing unit,two control units, an input ordering unit and a routing unit.

The header decode input which receives header decode control signals for determining which of the inputs that is designated to the respective output port as its respective destination.

The storing unit is connected to the respective output pots so the storing unit stores inputs temporarily until each of the inputs are routed to one of the output ports. The control units are connected to the storing unit and the output ports. The first of the two control units correctly routes the inputs to their respective destinations.

The header decode input provides a set of contending inputs.

The switching unit correctly routes the input to the respective

output port.This is correctly routed by a correct route status unit (304) such that if none or all of the inputs are routed to the first control unit then the second control unit(306) misroutes any of the inputs that have not been correctly routed by the first control unit.

ADVANTAGE- Avoids loss of throughput per port with an increase in the number of ports.

Dwg.2/6

Title Terms: CIRCUIT; SWITCH; MATRIX; CONTEND; ARBITER; SWITCH; MATRIX; SORT; CONTEND; INPUT; CORRECT; OUTPUT; PORT
Derwent Class: W01
International Patent Class (Main): **H04L-012/50**
File Segment: EPI

3/5/5 (Item 5 from file: 350)

DIALOG(R)File 350:Derwent WPIX

009710711 **Image available**
WPI Acc No: 1993-404264/199350
XRPX Acc No: N93-312879

Data communication system with clock system enabling data recovery - provides clock signal having frequency twice the frequency of first clock, and delay circuit which provides a delayed first clock signal

Patent Assignee: GTE LAB INC (SYLV)
Inventor: ANDRADE P L; **COOPERMAN M**
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 5268931	A	19931207	US 89459178	A	19891229	199350	B

Priority Applications (No Type Date): US 89459178 A 19891229
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5268931	A		5	H04L-007/04	

Abstract (Basic): US 5268931 A

The communication system includes a receiver, transmission media, and a transmitter for sending a digital signal and a first clock signal to the receiver through the transmission media.

The receiver includes a time delay circuit for delaying first clock signal by a time delay to provide a delayed first clock signal, an exclusive OR-gate with first input coupled to the first clock signal, a second input coupled to the delayed first clock signal, and an output providing a output signal only when one pulse is present at either input.

The output signal from the exclusive OR-gate is a second clock signal having a frequency twice the frequency of the first clock signal, and a latch has a signal input coupled to the digital signal and a clock input coupled to output signal from the exclusive OR-gate and an output providing a recovered digital signal.

USE/ADVANTAGE - Digital communication system with data recovery system. Allows data to be sent at max rate supported by the system.

Dwg.2/2

Title Terms: DATA; COMMUNICATE; SYSTEM; CLOCK; SYSTEM; ENABLE; DATA; RECOVER; CLOCK; SIGNAL; FREQUENCY; TWICE; FREQUENCY; FIRST; CLOCK; DELAY; CIRCUIT; DELAY; FIRST; CLOCK; SIGNAL
Derwent Class: W01
International Patent Class (Main): **H04L-007/04**
File Segment: EPI

3/5/6 (Item 6 from file: 350)

DIALOG(R)File 350:Derwent WPIX

008397031 **Image available**

WPI Acc No: 1990-284032/199038
XRPX Acc No: N90-219024
Broadband switch matrix with non linear cascading - uses log 2.N vertical cascade tree of multiplexers where each switch drives only one other switch
Patent Assignee: GTE LAB INC (SYLV); GTE LABS INC (SYLV)
Inventor: **COOPERMAN M** ; PAIGE A; SIEBER R W
Number of Countries: 008 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 387788	A	19900919	EP 90104724	A	19900313	199038	B
CA 2011828	A	19900917				199049	
JP 3016447	A	19910124	JP 9064497	A	19900316	199110	
US 5049877	A	19910917	US 90626340	A	19901213	199140	
EP 387788	A3	19920311	EP 90104724	A	19900313	199326	

Priority Applications (No Type Date): US 89324845 A 19890317; US 90626340 A 19901213
Cited Patents: NoSR.Pub; 5.Jnl.Ref; EP 396119; FR 2388447; JP 1158891; JP 60201795
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 387788	A				

Designated States (Regional): BE DE FR GB IT

Abstract (Basic): EP 387788 A
The switching matrix of MXN crosspoints is arranged in vertically cascaded groups interconnected with expansion stages such that inputs propagate through these stages to an output. Another configuration of a set of N parallel 2:1 multiplexers (78) are arranged in a vertical tree configuration of Log (to base 2)N cascade stages.
Each multiplexer has the same number of stages and hence selector elements and both are designed such that each switch drives only one other switch in the array.
ADVANTAGE - Minimises capacitive loading and minimised propagation delays. (9pp Dwg.No.3/3)
Title Terms: BROADBAND; SWITCH; MATRIX; NON; LINEAR; CASCADE; LOG; N; VERTICAL; CASCADE; TREE; MULTIPLEX; SWITCH; DRIVE; ONE; SWITCH
Derwent Class: W01; W02
International Patent Class (Additional): H03K-017/00; **H04L-012/48** ; H04Q-001/00; H04Q-011/04
File Segment: EPI

3/5/7 (Item 7 from file: 350)
DIALOG(R)File 350:Derwent WPIX

007935396 **Image available**
WPI Acc No: 1989-200508/198928
XRPX Acc No: N89-153220
Digital signals transmission and reception system - uses sense-control circuit at termination for sensing changes in operating condition of driver inverter to control termination inverter
Patent Assignee: GTE LABS INC (SYLV)
Inventor: **COOPERMAN M** ; SIEBER R W
Number of Countries: 007 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 323586	A	19890712	EP 88120837	A	19881213	198928	B
US 4859877	A	19890822	US 88140378	A	19880104	198942	
JP 2004075	A	19900109	JP 88328091	A	19881227	199007	

Priority Applications (No Type Date): US 88140378 A 19880104
Cited Patents: A3...9010; EP 186142; No-SR.Pub
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes

EP 323586 A E 11
Designated States (Regional): BE DE FR GB IT
US 4859877 A 12

Abstract (Basic): EP 323586 A
The system includes a driver section connected to a transmit connection (31) at one end of the transmission line (30) and a termination connection (32) at the opposite end of the transmission line (30) connected to a termination section and to an output terminal (37). The driver section includes a transmit inverter of a complementary pair of CMOS field effect transistors (FET'S) T1 and T2. A p-type transistor T1 and a resistance R1 are connected in series between a +5 voltage source and the transmit connection (31). An n-type transistor T2 and a resistance R2 are connected in series between the transmit connection (31) and ground.
The gates of transistors T1 and T2 are connected together and to an input terminal (35). The transistors T1 and T2 are each connected to individual resistive components R1 and R2. Alternatively, the transistors may be so constructed as to have the requisite resistive value.
USE/ADVANTAGE - For PCB'S or communication links. Under state conditions, establishment of appropriate voltage at output without dissipating any power.
3/4
Title Terms: DIGITAL; SIGNAL; TRANSMISSION; RECEPTION; SYSTEM; SENSE; CONTROL; CIRCUIT; TERMINATE; SENSE; CHANGE; OPERATE; CONDITION; DRIVE; INVERTER; CONTROL; TERMINATE; INVERTER
Derwent Class: U21; U22; W01
International Patent Class (Additional): H03K-005/02; H03K-019/01; H03L-005/00; **H04L-005/14** ; **H04L-025/02**
File Segment: EPI

3/5/8 (Item 8 from file: 350)
DIALOG(R)File 350:Derwent WPIX

007705360 **Image available**
WPI Acc No: 1988-339292/198848
XRPX Acc No: N88-257274
Line delay compensation arrangement for digital transmission system - ensures that responses from all remote subsystems attain central subsystem with max. delay of detection interval
Patent Assignee: GTE LAB INC (SYLV)
Inventor: **COOPERMAN M** ; SIEBER R W
Number of Countries: 009 Number of Patents: 007
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 292686	A	19881130	EP 88106077	A	19880415	198848	B
AU 8814184	A	19881103				198901	
JP 1016097	A	19890119				198909	
US 4805196	A	19890214	US 8743871	A	19870429	198909	
EP 292686	B	19901227				199101	
DE 3861421	G	19910207				199107	
CA 1288835	C	19910910				199141	

Priority Applications (No Type Date): US 8743871 A 19870429
Cited Patents: 1.Jnl.Ref; A3...8937; EP 182601; EP 260696; No-SR.Pub
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 292686	A	E	12		
Designated States (Regional): BE DE FR GB IT					
US 4805196	A		10		
EP 292686	B				
Designated States (Regional): BE DE FR GB IT					

Abstract (Basic): EP 292686 A

Each local PABX chip (10) connected by trunk lines (1-7) to a central switch (12) is capable of multiplexing, storage and signal processing for up to 40 telephones (16) or data terminals (18). All activated twisted-pair transmission lines (20) provide communication with the local chip (10) once per 125-microsecond frame.

Messages are transmitted by the central subsystem (10) during the first part of the frame, and responses from the remote subsystem (16) during the remainder. In each remote subsystem (16) a compensation delay is terminated, equal to a max. reduced by an amt. which corresponds to the actual delay associated with its particular line (20).

USE/ADVANTAGE - In network interconnecting single-chip PABX systems, with transmission lines unterminated at receiving ends, 03BX can operate over longer distances.

1/7

Title Terms: LINE; DELAY; COMPENSATE; ARRANGE; DIGITAL; TRANSMISSION; SYSTEM; ENSURE; RESPOND; REMOTE; SUBSYSTEM; ATTAIN; CENTRAL; SUBSYSTEM; MAXIMUM; DELAY; DETECT; INTERVAL
Index Terms/Additional Words: PABX
Derwent Class: W01
International Patent Class (Additional): G05B-023/02; H04B-003/04; **H04L-005/16** ; **H04L-007/00** ; **H04L-011/02** ; **H04L-025/12** ; H04M-003/28; H04M-007/14; H04Q-003/58
File Segment: EPI

3/5/9 (Item 9 from file: 350)
DIALOG(R)File 350:Derwent WPIX

004680981
WPI Acc No: 1986-184323/198629
XRPX Acc No: N86-137481

Low power line driving digital transmission system using PABX - has source impedance of transmitter matched to impedance of line and input impedance high to present open circuit to received signals

Patent Assignee: GTE LABS INC (SYLV)
Inventor: **COOPERMAN M**
Number of Countries: 009 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 187339	A	19860716	EP 85116251	A	19851219	198629	B
JP 61158225	A	19860717	JP 85290939	A	19851225	198635	
AU 8551100	A	19860703				198636	
US 4630284	A	19861216	US 84687537	A	19841228	198701	
CA 1260573	A	19890926				198944	

Priority Applications (No Type Date): US 84687537 A 19841228
Cited Patents: 1.Jnl.Ref; A3...8828; No-SR.Pub; WO 8402620
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 187339	A	E	61		

Designated States (Regional): BE DE FR GB IT

Abstract (Basic): EP 187339 A

The transmitter comprising differential driver (3020) consists of two PIN MOS transistor pairs (3001, 3003; 3000, 3002). The source terminal of the first pair (3000, 3001) is coupled to 45 volts and the source terminal of the second pair (3002, 3003) is coupled to ground. A twisted wire transmission line (20) has one more (20A) coupled to the intersection of the drain terminal of the first pair, while the drains of the second pair are coupled to the other wire (2013). The information bit stream at terminal (3025) is coupled to the gates of the first pair and the negative or reciprocal of the best stream is coupled to the gates of the second pair. Thus the transistor pairs are driven differentially and hence the transmission line (20).

The receiving end (3010) of transmission line (20) is coupled

across the gates of N-MOS transistors (3006, 3007) which present a high input impedance, thus effectively providing an open circuit at the receiving end. The characteristic impedance of the line (20) is typically 100 ohms and of a drain-source resistance of 1/2 Zo or 50 ohms. The line driver (3020) sending end circuit has a source impedance of 100 ohms matched to the line impedance 20, and is thus considered to be terminated at the sending end.

ADVANTAGE - Transmitter dissipates power only during logical transitions of input signals. Reduction of power dissipation by terminating line at sending rather than at receiving end. (61pp Dwg.No.17/27)

Title Terms: LOW; POWER; LINE; DRIVE; DIGITAL; TRANSMISSION; SYSTEM; PABX; SOURCE; IMPEDANCE; TRANSMIT; MATCH; IMPEDANCE; LINE; INPUT; IMPEDANCE; HIGH; PRESENT; OPEN; CIRCUIT; RECEIVE; SIGNAL

Derwent Class: U21; W01

International Patent Class (Additional): H04B-003/00; **H04L-005/14** ; **H04L-011/20** ; **H04L-025/02** ; H04M-001/74; H04Q-001/30; H04Q-003/58; H04Q-011/04

File Segment: EPI

3/5/10 (Item 10 from file: 350)

DIALOG(R)File 350:Derwent WPIX

004667348

WPI Acc No: 1986-170690/198627

XRPX Acc No: N86-127443

Two wire bidirectional digital transmission system - has two transmitter terminals sending signals simultaneously in opposite directions over wires

Patent Assignee: GTE LABS INC (SYLV)

Inventor: **COOPERMAN M** ; SIEBER R W

Number of Countries: 009 Number of Patents: 005

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 186142	A	19860702	EP 85116260	A	19851219	198627	B
JP 61158230	A	19860717	JP 85290938	A	19851225	198635	
AU 8551106	A	19860703				198636	
US 4638473	A	19870120	US 84687372	A	19841228	198706	
CA 1255369	A	19890606				198927	

Priority Applications (No Type Date): US 84687372 A 19841228

Cited Patents: 1.Jnl.Ref; A3...8813; EP 186131; EP 186132; EP 186139; EP 26931; No-SR.Pub; US 3730993; US 4162371

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 186142	A	E	65		

Designated States (Regional): BE DE FR GB IT

Abstract (Basic): EP 186142 A

Transmitters at two terminals generate first and second voltages onto a wire. A second wire is grounded at both ends. Impedance matching resistors are coupled between each of the transmitters and the first wire. A subtractor circuit at the first terminal linearly subtracts a signal proportional to the first signal from the signal propagated on the first wire from second to first terminals. Its output produces a difference signal proportional to the delayed and attenuated version of the second signal.

A second subtractor circuit at the second terminal linearly subtracts a signal proportional to the second signal from the signal propagating on the first wire from first to second terminal. Its output produces a difference signal proportional to the delayed and attenuated version of the first signal.

USE/ADVANTAGE - With Private Automatic Branch Exchange (PABX). Avoids added cost of additional wiring or requirement of time sharing of one pair of wires. (65pp Dwg.No.5/27)

Title Terms: TWO; WIRE; BIDIRECTIONAL; DIGITAL; TRANSMISSION; SYSTEM; TWO; TRANSMIT; TERMINAL; SEND; SIGNAL; SIMULTANEOUS; OPPOSED; DIRECTION; WIRE
Derwent Class: W01
International Patent Class (Additional): H04B-001/56; **H04L-005/14** ; **H04L-011/20** ; H04Q-001/30; H04Q-003/58
File Segment: EPI

3/5/11 (Item 11 from file: 350)
DIALOG(R)File 350:Derwent WPIX

004667338
WPI Acc No: 1986-170680/198627
XRPX Acc No: N86-127434
Digital switching system for PABX - uses addressable memory arrays for switching messages between near subscribers
Patent Assignee: GTE LABS INC (SYLV)
Inventor: **COOPERMAN M** ; GRAY D J; MOOLENBEEK R; SIEBER R W
Number of Countries: 009 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 186132	A	19860702	EP 85116208	A	19851219	198627	B
JP 61158294	A	19860717	JP 85290940	A	19851225	198635	
AU 8551105	A	19860703				198636	
US 4656621	A	19870407	US 84687548	A	19841228	198716	
CA 1244540	A	19881108				198849	

Priority Applications (No Type Date): US 84687548 A 19841228
Cited Patents: 7.Jnl.Ref; A3...8814; EP 186131; EP 186139; EP 186142; No-SR.Pub; US 3084222
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 186132	A	E	68		

Designated States (Regional): BE DE FR GB IT

Abstract (Basic): EP 186132 A
Messages of serial trains of digital pulses are coupled from an exchange to each subscriber during a TRANSMIT half of a transmission frame. Messages of serial bits of pulses from each subscribers are coupled to the exchange during the RECEIVE half of the transmission frame. A first group of pulses is written as M words of N bits into a message input array of addressable memory elements. This group of pulses is transferred and stored in a message output array of addressable memory elements as M words of N bits, and read out as N words of M bits, for transmission to the subscribers.
Signalling input and output arrays have addressable memory elements. At least one of the digital pulses is written into the input array. A data processor periodically reads the information in the input array and transfers outgoing signalling information to the output array for transmission to the subscribers.
ADVANTAGE - Reduced power dissipation. (68pp Dwg.No.1/27)
Title Terms: DIGITAL; SWITCH; SYSTEM; PABX; ADDRESS; MEMORY; ARRAY; SWITCH; MESSAGE; SUBSCRIBER
Derwent Class: U14; W01
International Patent Class (Additional): G11C-011/24; H04J-003/04; **H04L-005/16** ; **H04L-011/20** ; H04Q-001/30; H04Q-003/54; H04Q-011/04
File Segment: EPI

3/5/12 (Item 12 from file: 350)
DIALOG(R)File 350:Derwent WPIX

004667337
WPI Acc No: 1986-170679/198627
XRPX Acc No: N86-127433

Digital switching system for PABX - uses TDM digital communication of parallel sequential signals between telephone data subscribers

Patent Assignee: GTE LABS INC (SYLV)

Inventor: BEARAK A H; **COOPERMAN M** ; GRAY D J; PATEL L; SIEBER R W; WANG S I

Number of Countries: 009 Number of Patents: 005

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 186131	A	19860702	EP 85116207	A	19851219	198627	B
JP 61158295	A	19860717	JP 85290941	A	19851225	198635	
AU 8551104	A	19860703				198636	
US 4736361	A	19880405	US 84687541	A	19841228	198816	
CA 1247725	A	19881228				198905	

Priority Applications (No Type Date): US 84687541 A 19841228

Cited Patents: 4.Jnl.Ref; A3...8814; EP 186132; EP 186139; EP 186142; EP 26931; No-SR.Pub; US 4162371

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 186131	A	E	69		

Designated States (Regional): BE DE FR GB IT

Abstract (Basic): EP 186131 A

The system provides time division multiplex digital communication of parallel sequential signals of N words each of M bit length between N telephone/data subscribers over N transmission lines. A first array of memory devices has N columns and M rows of memory for storing the words from the subscribers. A parallel-to-serial circuit coupled by M lines to the first array provides a TDM serial digital bit stream of N words each M bits in length from the contents of the memory.

A transmission line is coupled to the parallel-to-serial circuit. A serial-to-parallel circuit accumulates the bit stream from the transmission line and provides an output of N words on M parallel lines. A second array of memory devices receives the words and has N columns and M rows for storing them. A coupling device couples the words to the data/telephone subscribers over transmission lines.

USE/ADVANTAGE - For Private Automatic Branch Exchange (PABX). Reduced power dissipation. (69pp Dwg.No.5/27)

Title Terms: DIGITAL; SWITCH; SYSTEM; PABX; TDM; DIGITAL; COMMUNICATE; PARALLEL; SEQUENCE; SIGNAL; TELEPHONE; DATA; SUBSCRIBER

Derwent Class: U14; W01

International Patent Class (Additional): G11C-007/00; G11C-011/24; **H04L-011/20** ; H04Q-001/30; H04Q-003/54; H04Q-011/04

File Segment: EPI

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S3        222   S2 NOT PD>19950508
S4        135   RD (unique items)
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File   6:NTIS 1964-2004/Aug W2
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File  35:Dissertation Abs Online 1861-2004/May
         (c) 2004 ProQuest Info&Learning
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         (c) 2004 FIZ TECHNIK
File  99:Wilson Appl. Sci & Tech Abs 1983-2004/Jul
         (c) 2004 The HW Wilson Co.
File 103:Energy SciTec 1974-2004/Jul B2
         (c) 2004 Contains copyrighted material
File 144:Pascal 1973-2004/Aug W1
         (c) 2004 INIST/CNRS
File 202:Info. Sci. & Tech. Abs. 1966-2004/Jul 12
         (c) 2004 EBSCO Publishing
File 233:Internet & Personal Comp. Abs. 1981-2003/Sep
         (c) 2003 EBSCO Pub.
File 239:Mathsci 1940-2004/Sep
         (c) 2004 American Mathematical Society
File 275:Gale Group Computer DB(TM) 1983-2004/Aug 11
         (c) 2004 The Gale Group
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
         (c) 1998 Inst for Sci Info
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S4        135   RD (unique items)
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         (c) 2004 Institution of Electrical Engineers
File   6:NTIS 1964-2004/Aug W2
         (c) 2004 NTIS, Intl Cpyrght All Rights Res
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         (c) 2004 Elsevier Eng.  Info. Inc.
File  34:SciSearch(R) Cited Ref Sci 1990-2004/Aug W1
         (c) 2004 Inst for Sci Info
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         (c) 2004 ProQuest Info&Learning
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         (c) 2003 EBSCO Pub.
File 239:Mathsci 1940-2004/Sep
         (c) 2004 American Mathematical Society
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         (c) 2004 EBSCO Publishing
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File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
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09281279	6522767	150	03/30/1999	OPTIMIZATION METHODS FOR THE INSERTION, PROTECTION, AND DETECTION OF DIGITAL WATERMARKS IN DIGITIZED DATA	MOSKOWITZ, SCOTT A.
09053628	6205249	150	04/02/1998	MULTIPLE TRANSFORM UTILIZATION AND APPLICATIONS FOR SECURE DIGITAL WATERMARKING	MOSKOWITZ , SCOTT A.
09047448	5905800	150	03/25/1998	METHOD AND SYSTEM FOR DIGITAL WATERMARKING	MOSKOWITZ , SCOTT A.
09046627	6598162	150	03/24/1998	METHOD FOR COMBINING TRANSFER FUNCTIONS WITH PREDETERMINED KEY CREATION	MOSKOWITZ , SCOTT A.
08999766	Not Issued	133	07/23/1997	STEGANOGRAPHIC METHOD AND DEVICE	MOSKOWITZ , SCOTT A.
08775216	5687236	150	12/31/1996	STEGANOGRAPHIC METHOD AND DEVICE	MOSKOWITZ , SCOTT A.
08772222	6078664	150	12/20/1996	Z-TRANSFORM IMPLEMENTATION OF DIGITAL WATERMARKS	MOSKOWITZ , SCOTT A.
08677435	5889868	150	07/02/1996	OPTIMIZATION METHODS FOR THE INSERTION, PROTECTION, AND DETECTION OF DIGTIAL WATERMARKS IN DIGITIZED DATA	MOSKOWITZ , SCOTT A.
08674726	Not Issued	120	07/02/1996	EXCHANGE MECHANISMS FOR DIGITAL INFORMATION PACKAGES WITH BANDWIDTH SECURITIZATION, MULTICHANNEL DIGITAL WATERMARKS, AND KEY MANAGEMENT	MOSKOWITZ, SCOTT A.

08587944	5822432	150	01/17/1996	METHOD FOR HUMAN-ASSISTED RANDOM KEY GENERATION AND APPLICATION FOR DIGITAL WATERMARK SYSTEM	MOSKOWITZ , SCOTT A.
08587943	5745569	150	01/17/1996	METHOD FOR STEGA-CIPHER PROTECTION OF COMPUTER CODE	MOSKOWITZ , SCOTT A.
08489172	5613004	150	06/07/1995	STEGANOGRAPHIC METHOD AND DEVICE	MOSKOWITZ , SCOTT A.
08365454	5539735	150	12/28/1994	DIGITAL INFORMATION COMMODITIES EXCHANGE	MOSKOWITZ , SCOTT A.
08083593	5428606	150	06/30/1993	DIGITAL INFORMATION COMMODITIES EXCHANGE	MOSKOWITZ , SCOTT A.

09281279	6522767	150	03/30/1999	OPTIMIZATION METHODS FOR THE INSERTION, PROTECTION, AND DETECTION OF DIGITAL WATERMARKS IN DIGITIZED DATA	MOSKOWITZ, SCOTT A.
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08587943	5745569	150	01/17/1996	METHOD FOR STEGA-CIPHER PROTECTION OF COMPUTER CODE	MOSKOWITZ , SCOTT A.
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08365454	5539735	150	12/28/1994	DIGITAL INFORMATION COMMODITIES EXCHANGE	MOSKOWITZ , SCOTT A.
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         (c) 2004 European Patent Office
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         (c) 2004  Thomson Derwent
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         (c) 2004 European Patent Office
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         (c) 2004  Thomson Derwent
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1/5/1 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01399563
COPY PROTECTION OF DIGITAL DATA COMBINING STEGANOGRAPHIC AND CRYPTOGRAPHIC TECHNIQUES
KOPIERSCHUTZ VON DIGITALEN DATEN DURCH KOMBINATION STEGANOGRAFISCHER UND KRYPTOGRAFISCHER VERFAHREN
PROTECTION CONTRE LA COPIE DE DONNEES NUMERIQUES AU MOYEN DE TECHNIQUES STEGANOGRAPHIQUES ET CRYPTOGRAPHIQUES COMBINEES
PATENT ASSIGNEE:
Moskowitz, Scott A., (2266201), 16711 Collins Avenue No. 2505, Miami FL 33160, (US), (Applicant designated States: all)
INVENTOR:
Moskowitz, Scott A. , 16711 Collins Avenue No. 2505, Miami FL 33160, (US
PATENT (CC, No, Kind, Date):
WO 2002003385 020110
APPLICATION (CC, No, Date): EP 2000947039 000705; WO 2000US18411 000705
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G11B-020/00; G06F-001/00
LEGAL STATUS (Type, Pub Date, Kind, Text):
Application: 020306 A1 International application. (Art. 158(1))
Application: 020306 A1 International application entering European phase
Application: 030903 A1 International application. (Art. 158(1))
Appl Changed: 030903 A1 International application not entering European phase
Withdrawal: 030903 A1 Date application deemed withdrawn: 20030206
LANGUAGE (Publication,Procedural,Application): English; English; English

1/5/2 (Item 2 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01312025
SYSTEMS, METHODS AND DEVICES FOR TRUSTED TRANSACTIONS
SYSTEM, VERFAHREN UND GERAETE FUER SICHERE TRANSAKTIONEN
SYSTEMES, PROCEDES ET DISPOSITIFS DE TRANSACTIONS EPROUVEES
PATENT ASSIGNEE:
Blue Spike, Inc., (3127521), 16711 Collins Avenue 2505, Miami, FL 33160, (US), (Applicant designated States: all)
INVENTOR:
MOSKOWITZ, Scott, A. , 16711 Collins Avenue, 2505, Miami, FL 33160, (US
PATENT (CC, No, Kind, Date):
WO 2001043026 010614
APPLICATION (CC, No, Date): EP 2000983976 001207; WO 2000US33126 001207
PRIORITY (CC, No, Date): US 169274 P 991207; US 456319 991208; US 545589 000407; US 594719 000616; WO 21US189 000804; US 657181 000907; US 234199 P 000920; US 671739 000929
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G06F-017/60
CITED PATENTS (WO A): XP 577034 ; XP 4138681 ; XP 2162270 ; XP 2162271 ; XP 2162272
CITED REFERENCES (WO A):
US 5903721 A
US 5790677 A
WO 9629795 A
WO 9724833 A
US 5539735 A
US 5687236 A
US 5745569 A
SIRBU M ET AL: "NETBILL: AN INTERNET COMMERCE SYSTEM OPTIMIZED FOR

NETWORK DELIVERED SERVICES" DIGEST OF PAPERS OF THE COMPUTER SOCIETY COMPUTER CONFERENCE (SPRING) COMPCON,US,LOS ALAMITOS, IEEE COMP. SOC. PRESS, vol. CONF. 40, 5 March 1995 (1995-03-05), pages 20-25, XP000577034 ISBN: 0-7803-2657-1

SCHUNTER M ET AL: "A status report on the SEMPER framework for secure electronic commerce" COMPUTER NETWORKS AND ISDN SYSTEMS,NL,NORTH HOLLAND PUBLISHING. AMSTERDAM, vol. 30, no. 16-18, 30 September 1998 (1998-09-30), pages 1501-1510, XP004138681 ISSN: 0169-7552

KONRAD K ET AL: "Trust and electronic commerce-more than a technical problem" PROCEEDINGS OF THE 18TH IEEE SYMPOSIUM ON RELIABLE DISTRIBUTED SYSTEMS, PROCEEDINGS 18TH IEEE SYMPOSIUM ON RELIABLE DISTRIBUTED SYSTEMS, LAUSANNE, SWITZERLAND, 19-22 OCT. 1999, pages 360-365, XP002162270 1999, Los Alamitos, CA, USA, IEEE Comput. Soc, USA ISBN: 0-7695-0290-3

KINI A ET AL: "Trust in electronic commerce: definition and theoretical considerations" PROCEEDINGS OF THE THIRTY-FIRST HAWAII INTERNATIONAL CONFERENCE ON SYSTEM SCIENCES (CAT. NO.98TB100216), PROCEEDINGS OF THE THIRTY-FIRST HAWAII INTERNATIONAL CONFERENCE ON SYSTEM SCIENCES, KOHALA COAST, HI, USA, 6-9 JAN. 1998, pages 51-61, XP002162271 1998, Los Alamitos, CA, USA, IEEE Comput. Soc, USA ISBN: 0-8186-8255-8

STEINAUER D D ET AL: "Trust and traceability in electronic commerce" STANDARD VIEW, SEPT. 1997, ACM, USA, vol. 5, no. 3, pages 118-124, XP002162272 ISSN: 1067-9936;

LEGAL STATUS (Type, Pub Date, Kind, Text):
Application: 010808 A1 International application. (Art. 158(1))
Application: 010808 A1 International application entering European phase
Application: 030305 A1 International application. (Art. 158(1))
Appl Changed: 030305 A1 International application not entering European phase
Withdrawal: 030305 A1 Date application deemed withdrawn: 20020708
LANGUAGE (Publication,Procedural,Application): English; English; English

1/5/3 (Item 3 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01276932
A SECURE PERSONAL CONTENT SERVER
SERVEUR DE CONTENU PERSONNEL SECURISE
PATENT ASSIGNEE:
Blue Spike, Inc., (3127521), 16711 Collins Avenue 2505, Miami, FL 33160, (US), (Applicant designated States: all)
INVENTOR:
MOSKOWITZ, Scott, A. , 16711 Collins Avenue 2505, Miami, FL 33160, (US)
BERRY, Michael, 12401 Princess Jeanne, Alburquerque, NM 87112, (US
PATENT (CC, No, Kind, Date): WO 2001018628 010315
APPLICATION (CC, No, Date): EP 2000957289 000804; WO 2000US21189 000804
PRIORITY (CC, No, Date): US 147134 P 990804; US 213489 P 000623
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: H04L-009/32
LEGAL STATUS (Type, Pub Date, Kind, Text):
Application: 010509 A2 International application. (Art. 158(1))
Application: 010509 A2 International application entering European phase
Application: 030319 A2 International application. (Art. 158(1))
Appl Changed: 030319 A2 International application not entering European phase
Withdrawal: 030319 A2 Date application deemed withdrawn: 20010505
LANGUAGE (Publication,Procedural,Application): English; English; English

1/5/4 (Item 4 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01214540
UTILIZING DATA REDUCTION IN STEGANOGRAPHIC AND CRYPTOGRAPHIC SYSTEMS
VERWENDUNG VON DATENREDUKTION IN STEGANOGRAPHISCHEN UND KRYPTOGRAFISCHEN SYSTEMEN
UTILISATION DE LA REDUCTION DE DONNEES DANS DES SYSTEMES STEGANOGRAPHIQUES ET CRYPTOGRAPHIQUES
PATENT ASSIGNEE:
Blue Spike, Inc., (3127520), 16711 Collins Avenue, Miami, FL 33160, (US), (Applicant designated States: all)
INVENTOR:
MOSKOWITZ, Scott, A. , 16711 Collins Avenue, Miami, FL 33160, (US)
BERRY, Michael, 12401 Princess Jeanne, Albuquerque, NM 87112, (US
LEGAL REPRESENTATIVE:
VOSSIUS & PARTNER (100314), Siebertstrasse 4, 81675 Munchen, (DE)
PATENT (CC, No, Kind, Date): EP 1172001 A1 020116 (Basic)
WO 200057643 000928
APPLICATION (CC, No, Date): EP 2000919398 000314; WO 2000US6522 000314
PRIORITY (CC, No, Date): US 125990 P 990324
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
INTERNATIONAL PATENT CLASS: H04N-007/167
CITED PATENTS (WO A): US 6061793 A ; US 5809139 A ; US 5848155 A ; US 5889868 A ; US 5915027 A ; US 5940134 A ; US 5991426 A ; US 6069914 A ; US 5943422 A
NOTE:
No A-document published by EPO
LEGAL STATUS (Type, Pub Date, Kind, Text):

Application:	001122 A1	International application. (Art. 158(1))
Application:	001122 A1	International application entering European phase
Application:	020116 A1	Published application with search report
Examination:	020116 A1	Date of request for examination: 20011023
Change:	020605 A1	International Patent Classification changed: 20020417
Search Report:	020814 A1	Date of drawing up and dispatch of supplementary:search report 20020701
Examination:	030102 A1	Date of dispatch of the first examination report: 20021112

LANGUAGE (Publication,Procedural,Application): English; English; English

1/5/5 (Item 5 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01097514
MULTIPLE TRANSFORM UTILIZATION AND APPLICATIONS FOR SECURE DIGITAL WATERMARKING
ANWENDUNG VON MEHREREN FREQUENZ-BEREICHS-TRANSFORMATIONEN UND ANWENDUNGEN ZUM SICHEREN ERZEUGEN VON DIGITALEN WASSERZEICHEN
UTILISATION ET APPLICATIONS DE TRANSFORMEES MULTIPLES POUR REALISER DES FILIGRANES NUMERIQUES DE SECURITE
PATENT ASSIGNEE:
Moskowitz, Scott A., (2266201), 16711 Collins Avenue No. 2505, Miami FL 33160, (US), (Applicant designated States: all)
INVENTOR:
Moskowitz, Scott A. , 16711 Collins Avenue No. 2505, Miami FL 33160, (US
LEGAL REPRESENTATIVE:
VOSSIUS & PARTNER (100314), Siebertstrasse 4, 81675 Munchen, (DE)
PATENT (CC, No, Kind, Date): EP 1068720 A1 010117 (Basic)
WO 9952271 991014
APPLICATION (CC, No, Date): EP 99915224 990402; WO 99US7262 990402
PRIORITY (CC, No, Date): US 53628 980402
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
INTERNATIONAL PATENT CLASS: H04N-001/32

CITED PATENTS (WO A): XP 604065 ; XP 2090178 ; XP 724633 ; XP 2108799

CITED REFERENCES (EP A):
See references of WO 9952271A1;
CITED REFERENCES (WO A):
DELAIGLE J -F ET AL: "DIGITAL WATERMARKING" PROCEEDINGS OF THE SPIE, vol. 2659, 1 February 1996 (1996-02-01), pages 99-110, XP000604065
SCHNEIDER M ET AL: "ROBUST CONTENT BASED DIGITAL SIGNATURE FOR IMAGE AUTHENTICATION" PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON IMAGE PROCESSING (IC, LAUSANNE, SEPT. 16 - 19, 1996, vol. 3, 16 September 1996 (1996-09-16), pages 227-230, XP002090178 INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERSISBN: 0-7803-3259-8
COX I J ET AL: "SECURE SPREAD SPECTRUM WATERMARKING FOR MULTIMEDIA" IEEE TRANSACTIONS ON IMAGE PROCESSING, vol. 6, no. 12, 1 December 1997 (1997-12-01), pages 1673-1686, XP000724633 ISSN: 1057-7149
PING WAH WONG: "A Public Key Watermark for Image Verification and Authentication" IEEE INTERNATIONAL CONFERENCE ON IMAGE PROCESSING, vol. 1, 4 - 7 October 1998, pages 455-459, XP002108799 Los Alamitos, CA, USA;
NOTE:
No A-document published by EPO
LEGAL STATUS (Type, Pub Date, Kind, Text):
Application: 010117 A1 Published application with search report
Application: 991208 A1 International application. (Art. 158(1))
Withdrawal: 030129 A1 Date application deemed withdrawn: 20020730
Examination: 010117 A1 Date of request for examination: 20001031
Examination: 020502 A1 Date of dispatch of the first examination report: 20020318
Application: 991208 A1 International application entering European phase
LANGUAGE (Publication,Procedural,Application): English; English; English

1/5/6 (Item 6 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00830913
STEGANOGRAPHIC METHOD AND DEVICE
STEGANOGRAPHISCHES VERFAHREN UND EINRICHTUNG
PROCEDE ET DISPOSITIF STEGANOGRAPHIQUES
PATENT ASSIGNEE:
The Dice Company, (2256650), P.o. Box 60471, Palo Alto, CA 94306-0471, (US), (applicant designated states: AT;BE;CH;DE;DK;ES;FI;FR;GB;GR;IE;IT;LI;LU;MC;NL;PT;SE)
INVENTOR:
COOPERMAN, Marc, S., 2929 Ramona, Palo Alto, CA 94306, (US)
MOSKOWITZ, Scott, A. , Townhouse 4 20191 East Country Club Drive, North Miami Beach, FL 33180, (US
LEGAL REPRESENTATIVE:
VOSSIUS & PARTNER (100314), Siebertstrasse 4, 81675 Munchen, (DE)
PATENT (CC, No, Kind, Date): EP 872073 A2 981021 (Basic)
WO 9642151 961227
APPLICATION (CC, No, Date): EP 96919405 960607; WO 96US10257 960607
PRIORITY (CC, No, Date): US 489172 950609
DESIGNATED STATES: AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
INTERNATIONAL PATENT CLASS: H04L-009/00;
NOTE:
No A-document published by EPO
LEGAL STATUS (Type, Pub Date, Kind, Text):
Search Report: 040428 A2 Date of drawing up and dispatch of supplementary:search report 20040316
Assignee: 20000216 A2 Transfer of rights to new applicant: Wistaria Trading, Inc. (2917420) 16771 Collins Avenue, Suite 2505 Miami, Florida 33160 US
Change: 040428 A2 International Patent Classification changed: 20040310

Change: 040428 A2 International Patent Classification changed: 20040310
Application: 970423 A2 International application (Art. 158(1))
Application: 981021 A2 Published application (Alwith Search Report ;A2without Search Report)
Examination: 981021 A2 Date of filing of request for examination: 980105
LANGUAGE (Publication,Procedural,Application): English; English; English

1/5/7 (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00869270 **Image available**
COPY PROTECTION OF DIGITAL DATA COMBINING STEGANOGRAPHIC AND CRYPTOGRAPHIC TECHNIQUES
PROTECTION CONTRE LA COPIE DE DONNEES NUMERIQUES AU MOYEN DE TECHNIQUES STEGANOGRAPHIQUES ET CRYPTOGRAPHIQUES COMBINEES
Patent Applicant/Inventor:
MOSKOWITZ Scott A , 16711 Collins Avenue #2505, Miami, FL 33160, US, US (Residence), US (Nationality
Legal Representative:
CHAPMAN Floyd B (et al) (agent), Wiley Rein & Fielding, Intellectual Property Department, 1776 K Street, N.W., Washington, DC 20006, US,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200203385 A1 20020110 (WO 0203385)
Application: WO 2000US18411 20000705 (PCT/WO US0018411)
Priority Application: WO 2000US18411 20000705
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Main International Patent Class: G11B-020/00
International Patent Class: G06F-001/00
Publication Language: English
Filing Language: English
Fulltext Availability:
Detailed Description
Claims
Fulltext Word Count: 5579

English Abstract
A method for combining transfer functions with predetermined key creation. In one embodiment, digital information, including a digital sample and format information, is protected by identifying and encoding a portion of the format information. Encoded digital information, including the digital sample and the encoded format information generated to protect the original digital information. In another embodiment, a digital signal, including digital samples in a file format having an inherent granularity, is protected by creating a predetermined key. The predetermined key is comprised of a transfer function-based mask set to manipulate data at the inherent granularity of the file format of the underlying digitized samples.

French Abstract
Cette invention concerne une methode de combinaison de fonctions de transfert avec creation d'une cle determinee. Selon un mode de realisation, on protege l'information numerique, dont un echantillon numerique et des informations sur le format, en identifiant et en codant une partie des informations sur le format. L'information numerique codee

comprend l'echantillon numerique et les informations sur le format codees generees pour proteger l'information numerique d'origine. Selon un autre mode de realisation, on cree une cle predeterminee pour proteger un signal numerique, dont des echantillons numeriques en format fichier avec une granularite inherente. Cette cle predeterminee est constituee par un masque a base de fonction de transfert concu pour manipuler des donnees a granularite inherente du format fichier des echantillons numerises sous-jacents.

Legal Status (Type, Date, Text)
Publication 20020110 A1 With international search report.

1/5/8 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00809395 **Image available**
SYSTEMS, METHODS AND DEVICES FOR TRUSTED TRANSACTIONS
SYSTEMES, PROCEDES ET DISPOSITIFS DE TRANSACTIONS EPROUVEES
Patent Applicant/Assignee:
BLUE SPIKE INC, 16711 Collins Avenue, #2505, Miami, FL 33160, US, US (Residence), US (Nationality), (For all designated states except: US)
Patent Applicant/Inventor:
MOSKOWITZ Scott A , 16711 Collins Avenue, #2505, Miami, FL 33160, US, US (Residence), US (Nationality), (Designated only for: US
Legal Representative:
CHAPMAN Floyd B (et al) (agent), Intellectual Property Department, Brobeck, Phleger & Harrison LLP, Suite 800, 1333 H Street, N.W., Washington, DC 20005, US,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200143026 A1 20010614 (WO 0143026)
Application: WO 2000US33126 20001207 (PCT/WO US0033126)
Priority Application: US 99169274 19991207; US 99456319 19991208; US 2000545589 20000407; US 2000594719 20000616; WO 2000US21189 20000804; US 2000657181 20000907; US 2000234199 20000920; US 2000671739 20000929
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Main International Patent Class: G06F-017/60
Publication Language: English
Filing Language: English
Fulltext Availability:
Detailed Description
Claims
Fulltext Word Count: 26725

English Abstract
The invention discloses a system for enhancing trust in transactions, most particularly in remote transactions between a plurality of transactional parties, for instance a seller and buyer(s) of goods and/or services over a public computer network such as the internet. Trust is disclosed to be a multivalent commodity, in that the trust that is to be enhanced relates to information about the subject matter of the transactions (e.g., the suitability of the goods and services sold), the bona fides of the supplier of the goods and services, the appropriateness of a pricing structure for a particular transaction or series of transactions, a quantum of additional transactional value that may be imparted to the transactional relationship, security of information exchange, etc. An important contributor to trust for such aspects of the

transaction is disclosed to be the use of highly-secure steganographic computer processing means for data identification, authentication, and transmission, such that confidence in the transaction components is enhanced. By providing an integrated multivalent system for enhancing trust across a variety of categories (for a variety of transaction species, including those in which the need for trust is greater on the part of one party than of another, as well as those in which both require substantial trust enhancement), the invention reduces barriers to forming and optimizing transactional relationships.

French Abstract
L'invention concerne un systeme servant a ameliorer des transactions eprouvees, plus particulierement, lorsqu'il s'agit de transactions a distance entre une pluralite d'interlocuteurs, par exemple, un vendeur et un ou plusieurs acheteurs de produits et/ou de services par l'intermediaire d'un reseau informatique public, tel qu'Internet. Selon l'invention, la confiance a developper lors d'une transaction se presente sous un caractere multivalent, ce qui signifie que la confiance a ameliorer dans la transaction concerne les informations relatives au sujet des transactions (par exemple, la viabilite des produits et des services vendus), la bonne foi du fournisseur de ces produits et de ces services, l'adequation d'une structure d'etablissement de prix en ce qui concerne une transaction determinee ou des series de transaction, un montant de valeur supplementaire pouvant etre applique a la transaction, ou la securite de l'echange des informations. Dans un de ces aspects contribuant a ameliorer la confiance d'une transaction, l'invention consiste a mettre en application des moyens de traitement informatises stegnanographiques extremement securises permettant d'identifier, d'authentifier et de transmettre des donnees, de facon a augmenter le niveau de confiance dans les composantes de la transaction. Ce systeme integre multivalent servant a augmenter la confiance reciproque entre differentes categories (pour une variete de types de transactions, y compris celles necessitant un niveau plus eleve de confiance de la part d'un interlocuteur que d'un autre, ainsi que pour celles demandant une augmentation importante de la confidentialite de la part des deux interlocuteurs) permet de limiter les obstacles a l'etablissement d'une transaction et d'optimiser les rapports transactionnels.

Legal Status (Type, Date, Text)
Publication 20010614 A1 With international search report.
Publication 20010614 A1 Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.
Examination 20010927 Request for preliminary examination prior to end of 19th month from priority date

1/5/9 (Item 3 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00785108 **Image available**
A SECURE PERSONAL CONTENT SERVER
SERVEUR DE CONTENU PERSONNEL SECURISE
Patent Applicant/Assignee:
BLUE SPIKE INC, 16711 Collins Avenue #2505, Miami, FL 33160, US, US (Residence), US (Nationality), (For all designated states except: US)
Patent Applicant/Inventor:
MOSKOWITZ Scott A , 16711 Collins Avenue #2505, Miami, FL 33160, US, US (Residence), US (Nationality), (Designated only for: US)
BERRY Michael, 12401 Princess Jeanne, Alburquerque, NM 87112, US, US (Residence), US (Nationality), (Designated only for: US
Legal Representative:
CHAPMAN Floyd B (et al) (agent), Baker Botts, LLP, The Warner, 1299 Pennsylvania Avenue, N.W., Washington, DC 20004, US,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200118628 A2-A3 20010315 (WO 0118628)
Application: WO 2000US21189 20000804 (PCT/WO US0021189)

Priority Application: US 99147134 19990804; US 2000213489 20000623
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
JP US
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
Main International Patent Class: H04L-009/32
International Patent Class: H04N-007/167
Publication Language: English
Filing Language: English
Fulltext Availability:
Detailed Description
Claims
Fulltext Word Count: 13461

English Abstract
A local content server system (LCS) for creating a secure environment for digital content is disclosed, which system comprises: a communications port in communication (Path 1) for connecting the LCS via a network to at least one Secure Electronic Content Distributor (SECD), which SECD is capable of storing a plurality of data sets, is capable of receiving a request to transfer at least one content data set, is capable of transmitting the at least one content data set in a secured transmission; a rewritable storage medium (Rewritable Media) whereby content received from outside the LCS may be stored and retrieved; a domain processor that imposes rules and procedures for content being transferred between the LCS and devices outside the LCS; and a programmable address module which can be programmed with an identification code uniquely associated with the LCS. Optionally, the system may further comprise: an interface to permit the LCS to communicate with one or more Satellite Units (SU).

French Abstract
L'invention concerne un systeme de serveur de contenu local (LCS) servant a former un environnement securise pour du contenu numerique. Ce systeme comporte : un port de communications communiquant de maniere a connecter par un reseau le LCS a au moins un distributeur de contenu electronique securise (SECD) ; le SECD est capable de stocker plusieurs ensembles de donnees, de recevoir une demande de transfert d'au moins un ensemble de donnees de contenu, et de transmettre cet/ces ensemble(s) de donnees de contenu dans une transmission securisee ; un support de stockage reinscriptible permettant de stocker et de recuperer le contenu recu d'un dispositif exterieur au LCS ; un processeur de domaine qui impose des regles et des procedures de transfert de contenu entre le LCS et les dispositifs exterieurs au LCS, et un module d'adresse programmable pouvant etre programme a l'aide d'un code d'identification associe de maniere unique au LCS. Le LCS comporte des regles et des procedures de reception et de transmission de donnees de contenu. Le systeme peut eventuellement comporter : une interface permettant au LCS de communiquer avec une ou plusieurs unites de satellite (SU) pouvant etre connectees au systeme par l'intermediaire de l'interface, ces SU etant capables de recevoir et de transmettre du contenu numerique ; au moins une SU; et/ou au moins un SECD. Le SECD peut comporter un dispositif de stockage pour stocker plusieurs ensembles de donnees, et un processeur de transactions pour valider la demande d'acquisition et traiter le paiement d'une demande en vue d'une recuperation d'un des ensembles de donnees. Le SECD comprend generalement un module de securite pour chiffrer ou securiser d'une autre maniere les donnees devant etre transmises par le SECD. L'invention concerne aussi un procede permettant de former un environnement securise pour du contenu numerique destine a un client. Dans le procede, un LCS demande et recoit un ensemble de donnees numeriques pouvant etre chiffre ou code. L'ensemble de donnees numeriques peut etre pourvu d'au moins un filigrane ouvert robuste permettant d'authentifier le contenu. L'ensemble de donnees numeriques est de preference pourvu de filigranes supplementaires qui sont produits au moyen d'informations sur le LCS demandant la copie et/ou le SECD fournissant la copie. Apres reception du contenu par le LCS, le LCS exerce un controle sur celui-ci et ne remet les donnees qu'a des usagers autorises. Les donnees ne sont generalement pas remises avant que le LCS

incorpore au moins un filigrane supplementaire sur la base des informations protegees qui sont associees au LCS et/ou sur les informations associees a l'usager.

Legal Status (Type, Date, Text)
Publication 20010315 A2 Without international search report and to be republished upon receipt of that report.
Search Rpt 20011122 Late publication of international search report
Republication 20011122 A3 With international search report.

1/5/10 (Item 4 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00744248 **Image available**
UTILIZING DATA REDUCTION IN STEGANOGRAPHIC AND CRYPTOGRAPHIC SYSTEMS
UTILISATION DE LA REDUCTION DE DONNEES DANS DES SYSTEMES STEGANOGRAPHIQUES ET CRYPTOGRAPHIQUES
Patent Applicant/Assignee:
BLUE SPIKE INC, 16711 Collins Avenue, Miami, FL 33160, US, US (Residence), US (Nationality), (For all designated states except: US)
Patent Applicant/Inventor:
MOSKOWITZ Scott A, 16711 Collins Avenue, Miami, FL 33160, US, US (Residence), US (Nationality), (Designated only for: US)
BERRY Michael, 12401 Princess Jeanne, Albuquerque, NM 87112, US, US (Residence), US (Nationality), (Designated only for: US
Legal Representative:
CHAPMAN Floyd B, Baker Botts, L.L.P., 1299 Pennsylvania Avenue, N.W., Washington, DC 20004, US
Patent and Priority Information (Country, Number, Date):
Patent: WO 200057643 A1 20000928 (WO 0057643)
Application: WO 2000US6522 20000314 (PCT/WO US0006522)
Priority Application: US 99125990 19990324
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
JP US
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
Main International Patent Class: H04N-007/167
Publication Language: English
Filing Language: English
Fulltext Availability:
Detailed Description
Claims
Fulltext Word Count: 8132

English Abstract
The present invention is a method for protecting a data signal where the method comprises the following steps: applying a data reduction technique (200) to the signal to produce a reduced signal, subtracting (60) the reduced data signal from the original signal to produce a remainder signal (39), embedding (300) a first watermark into the reduced data signal to produce a watermarked redued data signal, and adding (50) the watermarked reduced signal to the remainder signal to produce an output signal (90). A second watermark (301) may be embedded into the remainder signal (39) before the final addition (50) step. Cryptographic techniques may be employed to encrypt the remainder signal and/or the reduced signal prior to the addition step (50).

French Abstract
La presente invention porte sur un procede de protection d'un signal de donnees consistant a: appliquer une technique (200) de reduction de donnees pour reduire le signal de donnees; soustraire (60) le signal de donnees reduit du signal de donnees pour produire un signal residuel (39); inclure (300) un premier filigrane dans le signal de donnees reduit pour produire un signal de donnees reduit, filigrane; et ajouter (50) le signal de donnees reduit, filigrane au signal residuel pour generer un

signal de sortie. Un second filigrane (301) peut etre inclus dans le signal residuel (39) avant l'etape d'addition finale (50). De plus, il est possible d'utiliser des techniques cryptographiques pour coder les signaux de donnees reduits et/ou les signaux residuels avant l'etape d'addition finale (50).

Legal Status (Type, Date, Text)
Publication 20000928 A1 With international search report.
Publication 20000928 A1 Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.
Examination 20010308 Request for preliminary examination prior to end of 19th month from priority date

1/5/11 (Item 5 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00520919 **Image available**
MULTIPLE TRANSFORM UTILIZATION AND APPLICATIONS FOR SECURE DIGITAL WATERMARKING
UTILISATION ET APPLICATIONS DE TRANSFORMEES MULTIPLES POUR REALISER DES FILIGRANES NUMERIQUES DE SECURITE
Patent Applicant/Assignee:
MOSKOWITZ Scott A,
Inventor(s):
MOSKOWITZ Scott A
Patent and Priority Information (Country, Number, Date):
Patent: WO 9952271 A1 19991014
Application: WO 99US7262 19990402 (PCT/WO US9907262)
Priority Application: US 9853628 19980402
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
JP AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
Main International Patent Class: H04N-001/32
Publication Language: English
Fulltext Availability:
Detailed Description
Claims
Fulltext Word Count: 6582

English Abstract
Multiple transform utilization and applications for secure digital watermarking. In one embodiment of the present invention, digital blocks in digital information to be protected are transformed into the frequency domain using a fast Fourier transform. A plurality of frequencies and associated amplitudes are identified for each of the transformed digital blocks and a subset of the identified amplitudes is selected for each of the digital blocks using a primary mask from a key. Message information is selected from a message using a transformation table generated with a convolution mask. The chosen message information is encoded into each of the transformed digital blocks by altering the selected amplitudes based on the selected message information.

French Abstract
L'invention concerne une utilisation et des applications de transformees multiples pour realiser des filigranes numeriques de securite. Dans un mode de realisation de la presente invention, on effectue la transformee des blocs numeriques se trouvant dans les informations numeriques a proteger dans le domaine de frequence, au moyen d'une transformee de Fourier rapide. On identifie plusieurs frequences et les amplitudes associees pour chaque bloc numerique transforme et on selectionne un sous-ensemble des amplitudes identifiees pour chaque bloc numerique grace a un masque primaire a partir d'une cle. On selectionne des informations de message a partir d'un message au moyen d'une table de transformation generee avec un masque de convolution. On code les informations de

message choisies dans chaque bloc numerique transforme en modifiant les amplitudes selectionnees sur la base des informations de message selectionnees.

1/5/12 (Item 6 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00412403
OPTIMIZATION METHODS FOR THE INSERTION, PROTECTION AND DETECTION OF DIGITAL WATERMARKS IN DIGITIZED DATA
METHODES POUR OPTIMISER L'INSERTION, LA PROTECTION ET LA DETECTION DES FILIGRANES NUMERIQUES DANS DES DONNEES NUMERISEES
Patent Applicant/Assignee:
THE DICE COMPANY,
Inventor(s):
MOSKOWITZ Scott A ,
COOPERMAN Marc S
Patent and Priority Information (Country, Number, Date):
Patent: WO 9802864 A1 19980122
Application: WO 97US11455 19970702 (PCT/WO US9711455)
Priority Application: US 96677435 19960702
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
AU BR CN JP AM AZ BY KG KZ MD RU TJ TM AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE
Main International Patent Class: G09C-005/00
International Patent Class: H04L-09:00
Publication Language: English
Fulltext Availability:
Detailed Description
Claims
Fulltext Word Count: 11521

English Abstract
The implementations of digital watermarks can be optimally suited to particular transmission, distribution and storage mediums given the nature of digitally-sampled audio, video and other multimedia works. Watermark application parameters can be adapted to the individual characteristics of a given digital sample stream. Watermark information can be either carried in individual samples or in relationships between multiple samples, such as in a waveform shape. More optimal models may be obtained to design watermark systems that are tamper-resistant given the number and breadth of existent digitized sample options with different frequency and time components. The highest quality of a given content signal may be maintained as it is mastered, with the watermark suitably hidden, taking into account usage of digital filters and error correction. The quality of the underlying content signals can be used to identify and highlight advantageous locations for the insertion of digital watermarks. The watermark is integrated as closely as possible to the content signal, at a maximum level to force degradation of the content signal when attempts are made to remove the watermarks.

French Abstract
Il est possible d'implementer de maniere optimale des filigranes numeriques dans des supports de transmission, de distribution et de memoire selon la nature des oeuvres audio, video et autres multimedias echantillonnes sur le mode numerique. On peut adapter les parametres d'application des filigranes aux caracteristiques particulieres d'un certain flux d'echantillons numeriques. Les informations de filigrane peuvent etre transportees dans des echantillons individuels ou dans les relations entre des echantillons multiples, par exemple dans une forme d'onde. On peut obtenir davantage de modeles optimaux pour creer des systemes de filigranes resistants aux tentatives de violation selon le nombre et la taille des options d'echantillons existantes avec des composantes de frequence et de temps differentes. On conserve une qualite

de signal de contenu egale a celui de l'original, avec le filigrane convenablement dissimule, qui reste compatible avec l'utilisation de filtres numeriques et la correction d'erreurs. On peut utiliser la qualite des signaux de contenu sous-jacents afin d'identifier et de mettre en evidence les meilleurs emplacements pour l'insertion des filigranes numeriques. On integre ceux-ci le plus pres possible du signal de contenu, au niveau maximum, de facon a provoquer la degradation du signal de contenu en cas de tentative d'enlevement des filigranes.

1/5/13 (Item 7 from file: 349)

00385990

METHOD FOR AN ENCRYPTED DIGITAL WATERMARK
PROCEDE RELATIF A UN FILIGRANE NUMERIQUE CODE

Patent Applicant/Assignee:
THE DICE COMPANY,
Inventor(s):
COOPERMAN Marc,
MOSKOWITZ Scott A

Patent and Priority Information (Country, Number, Date):
Patent: WO 9726733 A1 19970724
Application: WO 97US652 19970117 (PCT/WO US9700652)
Priority Application: US 96587944 19960117
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
AL AU BA BB BG BR CA CN CU CZ EE GE HU IL IS JP KP KR LC LK LR LT LV MG MK MN MX NO NZ PL RO SG SI SK TR TT UA UZ VN KE LS MW SD SZ UG AM AZ BY KG KZ MD RU TJ TM AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ CF CG CI CM GA GN ML MR NE SN TD TG
Main International Patent Class: H04L-009/00
Publication Language: English
Fulltext Availability:
Detailed Description
Claims
Fulltext Word Count: 6499

English Abstract
A method for the human-assisted generation and application of pseudo-random keys for the purpose of encoding and decoding digital watermarks to and from a digitized data stream. A pseudo-random key and key application "envelope" are generated and stored using guideline parameters input by a human engineer interacting with a graphical representation of the digitized data stream. Key "envelope" information is permanently associated with the pseudo-random binary string comprising the key. Key and "envelope" information are then applied in a digital watermark system to the encoding and decoding of digital watermarks.

French Abstract
Cette invention concerne un procede de generation et d'application assistees par une personne de cles pseudo-aleatoires, lequel procede permet de coder et de decoder des filigranes numeriques depuis ou vers un flux de donnees numerisees. Une cle pseudo-aleatoire et une "enveloppe" d'application de cle sont generees puis stockees a l'aide de parametres de guidage qui sont entres par un ingenieur se servant de la representation graphique du flux de donnees numerisees. Les informations d'"enveloppe" de cle sont associees en permanence a la chaine binaire pseudo-aleatoire comprenant la cle. On procede ensuite a l'application de la cle et des informations d'"enveloppe" dans un systeme de filigranes numeriques afin de coder et de decoder ces derniers.

1/5/14 (Item 8 from file: 349)

00385989
METHOD FOR STEGA-CIPHER PROTECTION OF COMPUTER CODE
PROCEDE DE PROTECTION DE CODE INFORMATIQUE PAR CRYPTAGE STEGA
Patent Applicant/Assignee:
THE DICE COMPANY,
Inventor(s):
MOSKOWITZ Scott A ,
COOPERMAN Marc
Patent and Priority Information (Country, Number, Date):
Patent: WO 9726732 A1 19970724
Application: WO 97US651 19970116 (PCT/WO US9700651)
Priority Application: US 96587943 19960117
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
AL AU BA BB BG BR CA CN CU CZ EE GE HU IL IS JP KP KR LC LK LR LT LV MG MK MN MX NO NZ PL RO SG SI SK TR TT UA UZ VN KE LS MW SD SZ UG AM AZ BY KG KZ MD RU TJ TM AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ CF CG CI CM GA GN ML MR NE SN TD TG
Main International Patent Class: H04L-009/00
Publication Language: English
Fulltext Availability:
Detailed Description
Claims
Fulltext Word Count: 5111

English Abstract
A method for protecting computer code copyrights by encoding the code into a data resource with a digital watermark. The digital watermark contains licensing information interwoven with essential code resources encoded into data resources. The result is that while an application program can be copied in an uninhibited manner, only the licensed user having the license code can access essential code resources to operate the program and any descendant copies bear the required license code.

French Abstract
Cette invention concerne un procede de protection des droits d'auteur d'un code informatique, lequel procede consiste a coder ce code en une ressource de donnees a l'aide d'un filigrane numerique. Ce filigrane numerique contient des informations relatives a la licence d'exploitation, lesquelles sont imbriquees dans les ressources de code essentielles codees en ressources de donnees. Ainsi, meme lorsqu'un programme d'application est copie sans restriction aucune, seul l'utilisateur autorise qui possede le code de la licence d'exploitation peut acceder aux ressources de code essentielles afin de faire fonctionner le programme, toute copie descendante comportant le code de licence d'exploitation requis.

1/5/15 (Item 9 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00361567 **Image available**
DIGITAL INFORMATION COMMODITIES EXCHANGE WITH VIRTUAL MENUING
SYSTEME D'ECHANGE DU TYPE BOURSE POUR INFORMATIONS NUMERIQUES AVEC MENU VIRTUEL
Patent Applicant/Assignee:
MOSKOWITZ Scott A,
Inventor(s):
MOSKOWITZ Scott A
Patent and Priority Information (Country, Number, Date):
Patent: WO 9701892 A1 19970116
Application: WO 95US8159 19950626 (PCT/WO US9508159)
Priority Application: WO 95US8159 19950626
Designated States:
(Protection type is "patent" unless otherwise stated - for applications

prior to 2004)
CA CN JP KR SG US AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE
Main International Patent Class: H04B-013/00
International Patent Class: H04J-03:26; H04L-12:40
Publication Language: English
Fulltext Availability:
Detailed Description
Claims
Fulltext Word Count: 11052

English Abstract
A system for the exchange of digital information packets includes an exchange (1) with connectors to allow modular expandable units (11-15) to connect to the exchange over transmission media (5). The modular expandable units (11-15) send digital information packets from one to another over the exchange (1) in response to requests for these digital information packets. The exchange (1) allows for billing and other administrative functions. A virtual menuing system is disclosed for use with the exchange (1) allowing a simple choice of digital information packets to be published and/or subscribed to.

French Abstract
Ce systeme pour echanger des paquets d'informations numeriques comrpend un central du type bourse (1) avec des connecteurs permettant a des unites modulaires extensibles (11-15) de se connecter au central grace a des supports de transmission (5). Les unites modulaires extensibles (11-15) s'envoient des paquets d'informations numeriques en passant par le central (1) en reponse a des demandes relatives a ces paquets d'informations numeriques. Le central (1) permet d'effectuer la facturation ainsi que d'autres taches administratives. L'invention decrit un systeme de menu virtuel utilise avec le central (1) et qui permet de choisir simplement les paquets d'informations numeriques a publier et/ou auxquels on veut s'abonner.

1/5/16 (Item 10 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00359637
STEGANOGRAPHIC METHOD AND DEVICE
PROCEDE ET DISPOSITIF STEGANOGRAPHIQUES
Patent Applicant/Assignee:
THE DICE COMPANY,
Inventor(s):
COOPERMAN Marc S,
MOSKOWITZ Scott A
Patent and Priority Information (Country, Number, Date):
Patent: WO 9642151 A2 19961227
Application: WO 96US10257 19960607 (PCT/WO US9610257)
Priority Application: US 95489172 19950607
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
CA CN FI JP KR SG AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE
Main International Patent Class: H04L-009/00
Publication Language: English
Fulltext Availability:
Detailed Description
Claims
Fulltext Word Count: 13832

English Abstract
An apparatus and method for encoding and decoding additional information into a stream of digitized samples in an integral manner. The information is encoded using special keys. The information is contained in the samples, not prepended or appended to the sample stream. The method makes it extremely difficult to find the information in the samples if the

proper keys are not possessed by the decoder. The method does not cause a significant degradation to the sample stream. The method is used to establish ownership of copyrighted digital multimedia content and provide a disincentive to piracy of such material.

French Abstract

L'invention concerne un appareil et un procede pour coder et decoder des informations supplementaires en un courant d'echantillons numerises, de maniere integrale. Les informations sont codees a l'aide de touches speciales. Les informations sont contenues dans les echantillons, et non pas placees avant ou apres le courant d'echantillons. Ce procede rend extremement difficile la recherche d'informations dans les echantillons si le decodeur ne possede pas les criteres d'identification appropriees. Ce procede ne provoque pas de degradation notable du courant d'echantillons. Il permet d'etablir la propriete des donnees multimedia numeriques protegees et constitue une mesure de dissuasion contre le piratage de ce type de materiel.

1/5/17 (Item 1 from file: 350)

015939459 **Image available**
WPI Acc No: 2004-097300/200410
Related WPI Acc No: 1998-110853
XRPX Acc No: N04-077475

Article of manufacture comprising recorded medium storing digital watermark message encoding program, embeds exact length of watermark message in digital signal at identified watermarking locations

Patent Assignee: COOPERMAN M S (COOP-I); MOSKOWITZ S A (MOSK-I)
Inventor: COOPERMAN M S; **MOSKOWITZ S A**

Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 20030219143	A1	20031127	US 96677435	A	19960702	200410 B
			US 99281279	A	19990330	
			US 2003369344	A	20030218	

Priority Applications (No Type Date): US 2003369344 A 20030218; US 96677435 A 19960702; US 99281279 A 19990330
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030219143	A1		17	G06K-009/00	Cont of application US 96677435
					CIP of application US 99281279
					Cont of patent US 5889868
					CIP of patent US 6522767

Abstract (Basic): US 20030219143 A1

NOVELTY - An exact length of a watermark message is determined and embedded in a digital signal in the potential watermarking locations identified in the signal.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) a watermark message encoding method;

(2) a watermark decoding process; and

(3) a digital watermark encoding system.

USE - For implementing digital watermark in the content of copyrighted distribution and storage medium such as compact disk, cable television, satellite, audio tape, stereo amplifier, and in music, video and operating systems.

ADVANTAGE - More optimal models are obtained to design watermark systems that are tamper-resistant given the number and breadth of existent digitized sample options with different frequency and time components. The highest quality of a given content signal is maintained as it is mastered with the watermark suitably hidden taking into account usage of digital filters and error correction. Forces degradation of the content signal when attempts are made to remove the

watermarks.
DESCRIPTION OF DRAWING(S) - The figure shows a flowchart illustrating a digital watermark information encoding process.
pp; 17 DwgNo 1/2
Title Terms: ARTICLE; MANUFACTURE; COMPRISE; RECORD; MEDIUM; STORAGE; DIGITAL; WATERMARK; MESSAGE; ENCODE; PROGRAM; EMBED; EXACT; LENGTH; WATERMARK; MESSAGE; DIGITAL; SIGNAL; IDENTIFY; WATERMARK; LOCATE
Derwent Class: T01; W02; W03; W04
International Patent Class (Main): G06K-009/00
File Segment: EPI

1/5/18 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015838097
WPI Acc No: 2003-900301/200382
XRPX Acc No: N03-718698
Data transmission method for goods and services provision system, involves forming water marked packets, by combining watermark generated with respect to received stream of data, with each data packet
Patent Assignee: MOSKOWITZ S A (MOSK-I)
Inventor: **MOSKOWITZ S A**
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20030200439	A1	20031023	US 2002372788	P	20020417	200382	B
			US 2003417231	A	20030417		

Priority Applications (No Type Date): US 2002372788 P 20020417; US 2003417231 A 20030417
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20030200439	A1		18	H04L-009/00	Provisional application US 2002372788

Abstract (Basic): US 20030200439 A1
NOVELTY - The received stream of data are organized into several data packets. A watermark associated with the received stream of data, is generated. The generated watermark is combined with each data packet to form watermarked packets. Any one of the watermarked packet is transmitted across a network.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:
(1) data transmitting system;
(2) data packaging method;
(3) data packaging system;
(4) goods and services purchasing method; and
(5) goods and service selling system.
USE - For transmitting stream of data to goods and services provision system comprising hardware devices such as personal computer, cable box, telephone, cellular phone, personal digital assistant (PDA), personal music playback device.
ADVANTAGE - Quality of goods and service delivery is performed efficiently, using simple procedure.
pp; 18 DwgNo 0/0
Title Terms: DATA; TRANSMISSION; METHOD; GOODS; SERVICE; PROVISION; SYSTEM; FORMING; WATER; MARK; PACKET; COMBINATION; WATERMARK; GENERATE; RESPECT; RECEIVE; STREAM; DATA; DATA; PACKET
Derwent Class: T01; W01
International Patent Class (Main): H04L-009/00
File Segment: EPI

1/5/19 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015657602 **Image available**
WPI Acc No: 2003-719787/200368
Related WPI Acc No: 1997-385615
XRPX Acc No: N03-575350

Digital signal protection method involves generating predetermine key for manipulating file format information of digital signal, using message-digest five algorithm and data encryption standard algorithm

Patent Assignee: MOSKOWITZ S A (MOSK-I)
Inventor: **MOSKOWITZ S A**
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 6598162	B1	20030722	US 96587943	A	19960117	200368	B
			US 9846627	A	19980324		

Priority Applications (No Type Date): US 9846627 A 19980324; US 96587943 A 19960117
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6598162	B1		8	H04L-009/00	CIP of application US 96587943 CIP of patent US 5745569

Abstract (Basic): US 6598162 B1

NOVELTY - The method involves creating predetermined key having one or more mask sets, for manipulating file format information of a digital signal. The random or pseudo-random series of bits in the mask set is generated by processing initial series of random bits derived from keyboard latency intervals in random typing, using message-digest 5 (MD5) algorithm and data encryption standard (DES) algorithm.

USE - For copy protection or authentication of digital information e.g. music data and image data of digital signal recorded in compact disk (CD), video tape, audio tape and compact disk-digital audio (CD-DA).

ADVANTAGE - Enables increasing the data security as the digital data is manipulated using predetermined key generated by executing message digest 5 and data encryption standard algorithms.

DESCRIPTION OF DRAWING(S) - The figure shows the flowchart of the digital signal protection method.

pp; 8 DwgNo 1/1

Title Terms: DIGITAL; SIGNAL; PROTECT; METHOD; GENERATE; PREDETERMINED; KEY ; MANIPULATE; FILE; FORMAT; INFORMATION; DIGITAL; SIGNAL; MESSAGE; DIGEST ; FIVE; ALGORITHM; DATA; ENCRYPTION; STANDARD; ALGORITHM
Derwent Class: T01; W01; W04
International Patent Class (Main): H04L-009/00
International Patent Class (Additional): G06F-001/02; G06F-007/58
File Segment: EPI

1/5/20 (Item 4 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014736336
WPI Acc No: 2002-557040/200259
XRPX Acc No: N02-440949

Data object securing method for digital rights management involves embedding independent authentication data into data object which is scrambled and decoded to predetermined signal quality level

Patent Assignee: BERRY M W (BERR-I); MOSKOWITZ S A (MOSK-I)
Inventor: BERRY M W; **MOSKOWITZ S A**
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20020071556	A1	20020613	US 2000731039	A	20001207	200259	B

Priority Applications (No Type Date): US 2000731039 A 20001207
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes

US 20020071556 A1 12 H04N-007/167

Abstract (Basic): US 20020071556 A1

NOVELTY - A data object including digital data and a file format information is embedded with an independent authentication data. The data object is scrambled and decoded to a predetermined signal quality level.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the following:

(1) Data signal distribution method;

(2) Bandwidth allocation method; and

(3) Data securing system.

USE - For digital rights management (DRM).

ADVANTAGE - By embedding independent authentication data to the data objects, the robustness and security of the digital data such as music or video is enabled and a system-wide failure is reduced.

pp; 12 DwgNo 0/0

Title Terms: DATA; OBJECT; SECURE; METHOD; DIGITAL; MANAGEMENT; EMBED; INDEPENDENT; AUTHENTICITY; DATA; DATA; OBJECT; SCRAMBLE; DECODE; PREDETERMINED; SIGNAL; QUALITY; LEVEL

Derwent Class: T01; W02; W04

International Patent Class (Main): H04N-007/167

File Segment: EPI

1/5/21 (Item 5 from file: 350)

DIALOG(R)File 350:Derwent WPIX

014518344 **Image available**

WPI Acc No: 2002-339047/200237

XRPX Acc No: N02-266624

Copy protection of digital data combining steganographic and cryptographic techniques by identifying and encoding portion of format information to protect original information

Patent Assignee: MOSKOWITZ S A (MOSK-I)

Inventor: **MOSKOWITZ S A**

Number of Countries: 090 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200203385	A1	20020110	WO 2000US18411	A	20000705	200237	B
AU 200060709	A	20020114	AU 200060709	A	20000705	200237	
			WO 2000US18411	A	20000705		

Priority Applications (No Type Date): WO 2000US18411 A 20000705

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200203385	A1	E	24	G11B-020/00	

Designated States (National): AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TZ UG ZW

AU 200060709 A G11B-020/00 Based on patent WO 200203385

Abstract (Basic): WO 200203385 A1

NOVELTY - Some of the header information can be identified and scrambled using a predetermined key. The predetermined key is used to decode the information, before the digital information is played, steps. The predetermined key has a transfer function-based mask set to manipulate data at the inherent granularity of the file format of the underlying digitized samples.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following;

(1) for a method of protecting a digital signal,

(2) for a method for preparing for scrambling of a sample stream,

(3) for a method for preparing to encode information.

USE - Copy protection of digital data using steganographic and cryptographic techniques.

ADVANTAGE - Allowing play of content with degraded quality.

DESCRIPTION OF DRAWING(S) - The drawing is a flow diagram of the method.

pp; 24 DwgNo 1/1

Title Terms: COPY; PROTECT; DIGITAL; DATA; COMBINATION; CRYPTOGRAPHIC; TECHNIQUE; IDENTIFY; ENCODE; PORTION; FORMAT; INFORMATION; PROTECT; ORIGINAL; INFORMATION

Derwent Class: T01; W01

International Patent Class (Main): G11B-020/00

International Patent Class (Additional): G06F-001/00

File Segment: EPI

1/5/22 (Item 6 from file: 350)

013980575 **Image available**

WPI Acc No: 2001-464789/200150

Related WPI Acc No: 1998-110853; 2001-381830

XRPX Acc No: N01-344783

Local content server system for creating secure environment for digital content, permits LCS to receive digital content from outside if LCS detects that digital content being delivered is authorized for use by LCS

Patent Assignee: BLUE SPIKE INC (BLUE-N)

Inventor: BERRY M; **MOSKOWITZ S A**

Number of Countries: 020 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200118628	A2	20010315	WO 2000US21189	A	20000804	200150	B

Priority Applications (No Type Date): US 2000213489 P 20000623; US 99147134 P 19990804

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200118628	A2	E	49	G06F-000/00	

Designated States (National): JP US

Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

Abstract (Basic): WO 200118628 A2

NOVELTY - An address module which can be performed with an identification code uniquely associated with the LCS, is provided. A domain processor imposes rules and procedures for content being transferred between LCS and devices outside the LCS. The processor permits the LCS to receive digital content from outside the LCS only if the LCS determines that digital content being delivered is authorized for use by the LCS.

DETAILED DESCRIPTION - A communication port is provided for connecting the LCS through a network to a SECD which is capable of storing multiple data sets, receiving requests for transfer of data sets and transmitting them in a secure manner contents received from outside the LCS are stored and retrieved from a rewritable storage medium. An INDEPENDENT CLAIM is also included for secure environment creating method for digital content.

USE - For secure distribution of digitized value added information or media content like music.

ADVANTAGE - Different independently important modules can be utilized to enable a trusted transaction using competitive cryptographic and steganographic elements to support a wide variety of perceptually based media and information formats. Security can be maintained even with unsecured or legacy versions of value added information available to those who seek choices that fit less quantitative criteria. Allows certifiable level of security for high quality content while allowing a device to also be usable with unsecured content at a degraded quality level.

DESCRIPTION OF DRAWING(S) - The figure shows the block diagram of system with possible paths for content to enter and exit.
pp; 49 DwgNo 1/7
Title Terms: LOCAL; CONTENT; SERVE; SYSTEM; SECURE; ENVIRONMENT; DIGITAL; CONTENT; PERMIT; RECEIVE; DIGITAL; CONTENT; DETECT; DIGITAL; CONTENT; DELIVER; AUTHORISE
Derwent Class: T01
International Patent Class (Main): G06F-000/00
File Segment: EPI

1/5/23 (Item 7 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013897617 **Image available**
WPI Acc No: 2001-381830/200140
Related WPI Acc No: 1998-110853; 2001-464789
XRPX Acc No: N01-279994

Trusted transaction method in on-line environment, involves verifying, authenticating and authorizing digitally sampled information for approval with approval element selected from preset key, message and cipher

Patent Assignee: BLUE SPIKE INC (BLUE-N); MOSKOWITZ S A (MOSK-I)
Inventor: **MOSKOWITZ S A**
Number of Countries: 094 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200143026	A1	20010614	WO 2000US33126	A	20001207	200140	B
AU 200120659	A	20010618	AU 200120659	A	20001207	200161	
US 20010029580	A1	20011011	US 96677435	A	19960702	200162	
			US 99281279	A	19990330		
			US 99169274	P	19991207		
			US 2000234199	P	20000920		
			US 2001789711	A	20010222		
US 20020010684	A1	20020124	US 99169274	P	19991207	200210	
			US 2000234199	P	20000920		
			US 2000731040	A	20001207		
US 20020056041	A1	20020509	US 2000234199	P	20000920	200235	
			US 2001956262	A	20010920		

Priority Applications (No Type Date): US 2000456319 A 20001207; US 99169274 P 19991207; US 99456319 A 19991208; US 2000545589 A 20000407; US 2000594719 A 20000616; WO 2000US21189 A 20000804; US 2000657181 A 20000907; US 2000234199 P 20000920; US 2000671739 A 20000929; US 96677435 A 19960702; US 99281279 A 19990330; US 2001789711 A 20010222; US 2001956262 A 20010920
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200143026	A1	E	99	G06F-017/60	
					Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
					Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
AU 200120659	A			G06F-017/60	Based on patent WO 200143026
US 20010029580	A1			H04L-009/00	Cont of application US 96677435 CIP of application US 99281279 Provisional application US 99169274 Provisional application US 2000234199 Cont of patent US 5889868
US 20020010684	A1			H04L-009/00	Provisional application US 99169274 Provisional application US 2000234199
US 20020056041	A1			H04L-009/00	Provisional application US 2000234199

Abstract (Basic): WO 200143026 A1
NOVELTY - The method involves establishing an agreement to exchange

digitally sampled information between the two parties and thereby exchanging the information. The digitally sampled information is verified, authenticated and authorized for approval using an approval element selected from the group consisting of a preset key, message and cipher.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(a) Bidirectional value added information exchange method;
(b) Facilitation method of exchange of information data;
(c) Rights management method;
(d) Risk management method;
(e) Trusted transaction conduction device;
(f) Secure information data exchanging device;
(g) Information exchange system;
(h) Computer based decision protocol system

USE - For remote transaction between seller and buyer of goods and/or services over public computer network such as internet in on-line environment.

ADVANTAGE - Optimally requires little processing resources so as to maximize its usefulness and minimize its cost.

DESCRIPTION OF DRAWING(S) - The figure shows the block diagram of trusted transaction system.

pp; 99 DwgNo 1/13

Title Terms: TRANSACTION; METHOD; LINE; ENVIRONMENT; VERIFICATION; AUTHENTICITY; AUTHORISE; DIGITAL; SAMPLE; INFORMATION; APPROVE; APPROVE; ELEMENT; SELECT; PRESET; KEY; MESSAGE; CIPHER
Derwent Class: T01
International Patent Class (Main): G06F-017/60; H04L-009/00
File Segment: EPI

1/5/24 (Item 8 from file: 350)

DIALOG(R)File 350:Derwent WPIX

013653249 **Image available**
WPI Acc No: 2001-137461/200114
XRPX Acc No: N01-100138

Protecting data signal method for encoding digital watermark into signal, comprises applying data reduction technique to reduce data signal into reduced data signal by subtracting reduced data from data signal to produce remainder signal

Patent Assignee: BLUE SPIKE INC (BLUE-N)
Inventor: BERRY M; **MOSKOWITZ S A**
Number of Countries: 021 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200057643	A1	20000928	WO 2000US6522	A	20000314	200114	B
EP 1172001	A1	20020116	EP 2000919398	A	20000314	200207	
			WO 2000US6522	A	20000314		

Priority Applications (No Type Date): US 99125990 P 19990324
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200057643	A1	E	32	H04N-007/167	

Designated States (National): JP US
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

EP 1172001 A1 E H04N-007/167 Based on patent WO 200057643
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

Abstract (Basic): WO 200057643 A1

NOVELTY - Comprises the steps of applying a data reduction technique (200) to the signal to produce a reduced signal, subtracting (60) to The reduced data signal from the original signal (11) to produce a remainder signal, embedding (300) a first watermark into the reduced signal to produce a watermark reduced data signal (40), and

adding (50) to the watermarked reduced signal to the remainder signal to produce an output signal (80). A second watermark (301) may be embedded into the remainder signal before the final addition step.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) a method of securing a data signal.

(2) a system for securing a data signal.

USE - For encoding digital watermark into a signal for conveying information relating to the signal and also protecting against unauthorized manipulation of the signal.

ADVANTAGE - Utilizes data reduction to allow better performance in watermarking as well as cryptographic methods concerning binary executable code, its machine readable form, text and other functionality-based or communication-related applications.

DESCRIPTION OF DRAWING(S) - The figure illustrates a system and method of implementing a multiple-watermark system.

Original signal (11)
Reduced data signal (40)
Addition (50)
Subtracting (60)
Output signal (80)
Data reduction technique (200)
First and second water marking (300, 301)
pp; 32 DwgNo 2/9

Title Terms: PROTECT; DATA; SIGNAL; METHOD; ENCODE; DIGITAL; WATERMARK; SIGNAL; COMPRISE; APPLY; DATA; REDUCE; TECHNIQUE; REDUCE; DATA; SIGNAL; REDUCE; DATA; SIGNAL; SUBTRACT; REDUCE; DATA; DATA; SIGNAL; PRODUCE; REMAINING; SIGNAL
Derwent Class: T01; W02; W04
International Patent Class (Main): H04N-007/167
File Segment: EPI

1/5/25 (Item 9 from file: 350)

013465051
WPI Acc No: 2000-636994/200061
XRPX Acc No: N00-472292

Digital watermark application for copyright protection of multimedia data, involves encoding digital watermark data into non-deterministic components of multimedia signal identified using Z-transform calculation

Patent Assignee: COOPERMAN M S (COOP-I); MOSKOWITZ S A (MOSK-I)
Inventor: COOPERMAN M S; **MOSKOWITZ S A**
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 6078664	A	20000620	US 96772222	A	19961220	200061	B

Priority Applications (No Type Date): US 96772222 A 19961220
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6078664	A		7	H04K-001/00	

Abstract (Basic): US 6078664 A

NOVELTY - Non-deterministic components of received multimedia content signal are identified using Z-transform calculation. Digital watermark data are then encoded into the identified non-deterministic components to create digital sample stream.

USE - For copyright protection of multimedia data.

ADVANTAGE - Z-transform calculations are used to measure suitability of particular locations of sample stream in which watermark data is to be encoded. Usage of Z-transform establishes more secure envelope for watermark insertion so as to prevent attacks by pirates seeking to identify location of watermarks or erase them without knowing their specific location.

pp; 7 DwgNo 0/0

Title Terms: DIGITAL; WATERMARK; APPLY; PROTECT; DATA; ENCODE; DIGITAL; WATERMARK; DATA; NON; COMPONENT; SIGNAL; IDENTIFY; TRANSFORM; CALCULATE
Derwent Class: T01; W02; W04
International Patent Class (Main): H04K-001/00
File Segment: EPI

1/5/26 (Item 10 from file: 350)
DIALOG(R)File 350:Derwent WPIX

012851160 **Image available**
WPI Acc No: 2000-022992/200002
XRPX Acc No: N00-017116

Digital water marking of audio, video data transmitted through internet for performing e-commerce

Patent Assignee: MOSKOWITZ S A (MOSK-I)
Inventor: **MOSKOWITZ S A**
Number of Countries: 021 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9952271	A1	19991014	WO 99US7262	A	19990402	200002	B
EP 1068720	A1	20010117	EP 99915224	A	19990402	200105	
			WO 99US7262	A	19990402		
US 6205249	B1	20010320	US 9853628	A	19980402	200118	
US 20010010078	A1	20010726	US 9853628	A	19980402	200146	
			US 2001767733	A	20010124		
JP 2002510943	W	20020409	WO 99US7262	A	19990402	200227	
			JP 2000542907	A	19990402		

Priority Applications (No Type Date): US 9853628 A 19980402; US 2001767733 A 20010124
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9952271	A1	E	28	H04N-001/32	
Designated States (National): JP					
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
EP 1068720	A1	E		H04N-001/32	Based on patent WO 9952271
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE					
US 6205249	B1			G06K-009/46	
US 20010010078	A1			H04K-001/02	Cont of application US 9853628
					Cont of patent US 6205249
JP 2002510943	W		36	H04N-001/387	Based on patent WO 9952271

Abstract (Basic): WO 9952271 A1

NOVELTY - Digital data blocks are converted into the frequency domain using fast Fourier transformation, frequencies and amplitudes of transformed blocks determined, and specific amplitudes of each block are chosen. The digital data is selected using a transformation table for encoding in transformed block by altering the selected amplitude.

DETAILED DESCRIPTION - The selection of specific amplitudes are done using a primary mask from a key. If the digital data is an audio information, a reference subset of audio amplitude setting information and original magnitudes of the audio signal are stored in the key. In case of digital video information, each data block represents pixel regions in each color channel. A reference subset of pixels which form a pixel line in the image as well as original dimensions are stored in the key. If the image is rectangular, the line represents a diagonal of the rectangle. The transformation table for selecting data for encoding is generated using a convolution mask and encoding is done by reducing value selected amplitudes by specific level if the data bits are true. If the bits are not true, the amplitudes are not reduced.

USE - For protecting copyright of digital data like music, photograph, video transmitted through internet for performing e-commerce.

ADVANTAGE - The copyright owners have greater control over the

protected information. For still pictures and audio data, water marking can be done without requiring decoding of original non-watermarked information. Hence water mark cannot be detected easily. Authentication of image can be done by eliminating false positive matches with cryptography and communication of copyright with third party is enabled. Different keys can be used for encoding various data and the same keys is used for decoding water marked message.

DESCRIPTION OF DRAWING(S) - The figure shows a flowchart of digital water marking process.

pp; 28 DwgNo 1/3

Title Terms: DIGITAL; WATER; MARK; AUDIO; VIDEO; DATA; TRANSMIT; THROUGH; PERFORMANCE

Derwent Class: T05; W01; W02; W04

International Patent Class (Main): G06K-009/46; H04K-001/02; H04N-001/32; H04N-001/387

International Patent Class (Additional): G06K-009/00; G06K-009/36; G06T-001/00; H04L-009/00; H04N-001/40; H04N-001/44; H04N-007/08; H04N-007/081

File Segment: EPI

1/5/27 (Item 11 from file: 350)

DIALOG(R)File 350:Derwent WPIX

011693943

WPI Acc No: 1998-110853/199810

Related WPI Acc No: 2001-381830; 2001-464789; 2004-097300

XRPX Acc No: N98-088681

Amplitude independent encoding method for digital watermark information in signal - integrating watermark as closely as possible to content of signal at maximum level to force degradation of content signal when attempts are made to remove watermarks

Patent Assignee: DICE CO (DICE-N); WISTARIA TRADING INC (WIST-N)

Inventor: COOPERMAN M; **MOSKOWITZ S A** ; COOPERMAN M S

Number of Countries: 023 Number of Patents: 004

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9802864	A1	19980122	WO 97US11455	A	19970702	199810	B
AU 9735881	A	19980209	AU 9735881	A	19970702	199823	
US 5889868	A	19990330	US 96677435	A	19960702	199920	
US 6522767	B1	20030218	US 96677435	A	19960702	200317	
			US 99281279	A	19990330		

Priority Applications (No Type Date): US 96677435 A 19960702; US 99281279 A 19990330

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9802864	A1	E	42	G09C-005/00	
Designated States (National): AU BR CN JP					
Designated States (Regional): AT BE CH DE DK EA ES FI FR GB GR IE IT LU MC NL PT SE					
AU 9735881	A				Based on patent WO 9802864
US 5889868	A			H04L-009/00	
US 6522767	B1			G06K-009/00	Cont of application US 96677435 Cont of patent US 5889868

Abstract (Basic): WO 9802864 A

The method involves determining in a signal a sample window with a minium and a maximum. A quantisation interval of the sample window is determined. The quantisation interval can be used to quantise normalized window samples. The sample window is normalised to provide normalised samples. Normalised samples conform to a limited range of values, proportional to real sample values and comprise a representation of the real samples values with a resolution higher than the real range of values. The normalised values can be divided by the quantisation interval into distinct quantisation levels.

The normalised samples are analysed to determine quantisation

levels. The message bits are compared to the corresponding quantisation level information from the analysing step. When a bit conflicts with the quantisation level, the quantisation level of the sample window is adjusted to correspond to the message bit. Finally the analysed normalised samples are de-normalised.

ADVANTAGE - Allows implementation of digital watermarks which are optimally suited to particular transmission, distribution or storage mediums given nature of digitally-sampled audio, video and other multimedia works. Watermark application parameters are adapted to individual characteristics of given sample stream.

Title Terms: AMPLITUDE; INDEPENDENT; ENCODE; METHOD; DIGITAL; WATERMARK; INFORMATION; SIGNAL; INTEGRATE; WATERMARK; CLOSELY; POSSIBILITY; CONTENT; SIGNAL; MAXIMUM; LEVEL; FORCE; DEGRADE; CONTENT; SIGNAL; ATTEMPT; MADE; REMOVE; WATERMARK

Derwent Class: P85; T01; W01

International Patent Class (Main): G06K-009/00; G09C-005/00; H04L-009/00

International Patent Class (Additional): H04L-009/00

File Segment: EPI; EngPI

1/5/28 (Item 12 from file: 350)

DIALOG(R)File 350:Derwent WPIX

011407709

WPI Acc No: 1997-385616/199735

XRPX Acc No: N97-320994

User assisted encrypted digital watermark creation - involves user generating pseudo random key and key application from graphical representation of digitised data stream which are then applied to digital watermark

Patent Assignee: DICE CO (DICE-N)

Inventor: COOPERMAN M; **MOSKOWITZ S A**

Number of Countries: 065 Number of Patents: 004

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9726733	A1	19970724	WO 97US652	A	19970117	199735	B
AU 9718295	A	19970811	AU 9718295	A	19970116	199747	
US 5822432	A	19981013	US 96587944	A	19960117	199848	
US 5905800	A	19990518	US 96587944	A	19960117	199927	
			US 9847448	A	19980325		

Priority Applications (No Type Date): US 96587944 A 19960117; US 9847448 A 19980325

Cited Patents: US 5530759

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9726733	A1	E	29	H04L-009/00	
	Designated States (National): AL AU BA BB BG BR CA CN CU CZ EE GE HU IL IS JP KP KR LC LK LR LT LV MG MK MN MX NO NZ PL RO SG SI SK TR TT UA UZ VN				
	Designated States (Regional): AT BE CH DE DK EA ES FI FR GB GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG				
AU 9718295	A			H04L-009/00	Based on patent WO 9726733
US 5905800	A			H04L-009/00	Cont of application US 96587944 Cont of patent US 5822432
US 5822432	A			H04L-009/00	

Abstract (Basic): WO 9726733 A

The method for adding a digital watermark to an information or content stream includes using parameters defined by the user. The content signal varies over time such that different levels of watermark could be encrypted at different times. e.g. an audio signal may have sections with high distortion levels in which the watermark amplitude could be high.

The user can have a system that graphically presents the content signal and allows the user to define time segments in which the watermark will be placed. The user can also define the frequency bands

to be encoded. These parameters along with a digital watermark and encryption key are used to encode the watermark.

USE/ADVANTAGE - Protection of copywriteable works, e.g. musical recordings, movies, video games etc. Increases level of difficulty of erasing or detecting watermark.

Dwg.0/0

Title Terms: USER; ASSIST; ENCRYPTION; DIGITAL; WATERMARK; CREATION; USER; GENERATE; PSEUDO; RANDOM; KEY; KEY; APPLY; GRAPHICAL; REPRESENT; DIGITAL; DATA; STREAM; APPLY; DIGITAL; WATERMARK

Derwent Class: T01; W01

International Patent Class (Main): H04L-009/00

File Segment: EPI

1/5/29 (Item 13 from file: 350)

DIALOG(R)File 350:Derwent WPIX

011407708

WPI Acc No: 1997-385615/199735

Related WPI Acc No: 2003-719787

XRPX Acc No: N97-320993

Stega cipher protection for copy protection of computer programs - involves encoding some essential code resources as watermarks in data resources and using random dynamic memory shuffling

Patent Assignee: MOSKOWITZ S A (MOSK-I); DICE CO (DICE-N)

Inventor: **MOSKOWITZ S A** ; COOPERMAN M

Number of Countries: 065 Number of Patents: 004

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9726732	A1	19970724	WO 97US651	A	19970116	199735	B
AU 9718294	A	19970811	AU 9718294	A	19970116	199747	
US 5745569	A	19980428	US 96587943	A	19960117	199824	
US 20040086119	A1	20040506	US 96587943	A	19960117	200430	
			US 9846627	A	19980324		
			US 2003602777	A	20030625		

Priority Applications (No Type Date): US 96587943 A 19960117; US 9846627 A 19980324; US 2003602777 A 20030625

Cited Patents: US 4262329; US 5349655

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9726732	A1	E	21	H04L-009/00	

Designated States (National): AL AU BA BB BG BR CA CN CU CZ EE GE HU IL IS JP KP KR LC LK LR LT LV MG MK MN MX NO NZ PL RO SG SI SK TR TT UA UZ VN

Designated States (Regional): AT BE CH DE DK EA ES FI FR GB GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG

AU 9718294	A			Based on patent WO 9726732
US 5745569	A	6		
US 20040086119	A1		H04N-007/167	Cont of application US 96587943
				Cont of application US 9846627
				Cont of patent US 5745569
				Cont of patent US 6598162

Abstract (Basic): WO 9726732 A

The copy protection system for computer applications allows the application to be freely copied but requires a key to become operational. The application contains executable code arranged in functions and held as code resources. It also contains sections holding data, held as data resources. A utility program is provided with a list of executable code resources and data resources. The utility encodes some of the code resources as digital watermarks in the data resources.

At run time, licence information is required to allow the watermarks to be decoded back to code resources. Also the memory mapping is dynamically changed during operation.

USE/ADVANTAGE - Embeds licence information into copiable applications whilst protecting against illegal use or analysis.

Provides level of security for executable code on similar grounds as that which can be provided for digitised samples.

Dwg.0/0

Title Terms: CIPHER; PROTECT; COPY; PROTECT; COMPUTER; PROGRAM; ENCODE; ESSENTIAL; CODE; RESOURCE; WATERMARK; DATA; RESOURCE; RANDOM; DYNAMIC; MEMORY; SHUFFLE

Derwent Class: T01

International Patent Class (Main): H04L-009/00; H04N-007/167

File Segment: EPI

1/5/30 (Item 14 from file: 350)

DIALOG(R)File 350:Derwent WPIX

011122469 **Image available**

WPI Acc No: 1997-100394/199709

XRPX Acc No: N97-082961

System for exchange of digital information packets - has exchange with connectors which allows modular expandable units to connect to exchange over transmission media

Patent Assignee: MOSKOWITZ S A (MOSK-I)

Inventor: **MOSKOWITZ S A**

Number of Countries: 022 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9701892	A1	19970116	WO 95US8159	A	19950626	199709	B

Priority Applications (No Type Date): WO 95US8159 A 19950626

Cited Patents: US 4491983; US 4958341

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9701892	A1	E	44	H04B-013/00	

Designated States (National): CA CN JP KR SG US

Designated States (Regional): AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE

Abstract (Basic): WO 9701892 A

The information packet exchange system includes an exchange which has several connectors linking it to transmission media. Several modular expansion units each have an input source terminal, an output terminal and a central processor. The expansion units are connected to the exchange through the transmission media.

The units allow the transfer of a user selected amount and type of digital information between the units. The data can be transferred over two transmission media at the same time. The input source terminal includes a selected module which can accommodate a variety of signal inputs.

USE/ADVANTAGE - For digital information exchange system. For bulletin boards. For use with telecommunications lines. Records billing and administration information. Allows subscribers to send information back to centre. Allows large number of service providers to link to large number of subscribers. Flexible.

Dwg.1/4

Title Terms: SYSTEM; EXCHANGE; DIGITAL; INFORMATION; PACKET; EXCHANGE; CONNECT; ALLOW; MODULE; EXPAND; UNIT; CONNECT; EXCHANGE; TRANSMISSION; MEDIUM

Derwent Class: T01; W01; W02

International Patent Class (Main): H04B-013/00

International Patent Class (Additional): H04J-003/26; H04L-012/40

File Segment: EPI

1/5/31 (Item 15 from file: 350)

DIALOG(R)File 350:Derwent WPIX

011087732

WPI Acc No: 1997-065656/199706
XRPX Acc No: N97-053983

Steganographic method for encoding and decoding additional information into stream of digitised samples - using special keys to encode data contained in samples, with same keys being required at decoder

Patent Assignee: DICE CO (DICE-N)
Inventor: COOPERMAN M S; **MOSKOWITZ S A** ; COOPERMAN M
Number of Countries: 024 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9642151	A2	19961227	WO 96US10257	A	19960607	199706	B
US 5613004	A	19970318	US 95489172	A	19950609	199717	
WO 9642151	A3	19970213	WO 96US10257	A	19960607	199722	
US 5687236	A	19971111	US 95489172	A	19950609	199751	
			US 96775216	A	19961231		
EP 872073	A2	19981021	EP 96919405	A	19960607	199846	
			WO 96US10257	A	19960607		

Priority Applications (No Type Date): US 95489172 A 19950609; US 96775216 A 19961231
Cited Patents: US 4908873; US 4979210; US 5073925; US 5287407; US 5365586; US 5408505; US 5412718
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9642151	A2	E	50	H04L-000/00	
Designated States (National): CA CN FI JP KR SG					
Designated States (Regional): AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
US 5613004	A		16	H04L-009/20	
US 5687236	A		24	H04L-009/00	Cont of application US 95489172 Cont of patent US 5613004
EP 872073	A2	E		H04L-009/00	Based on patent WO 9642151
Designated States (Regional): AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE					
WO 9642151	A3			H04L-000/00	

Abstract (Basic): WO 9642151 A

The steganographic method involves using random keys to encode additional information into digitised samples such that a signal generated from the modified sample stream is not significantly degraded and so that the additional information cannot be extracted without the special keys.

The signal generated by the modified sample stream will be degraded by attempts to erase, scramble or otherwise obliterate the encoded additional information. The method uses a sample buffer for holding and accessing and transforming the digitised samples. A digital signal processor performs Fast Fourier transforms and a memory contains information representing a primary mask, a convolutional mask and message delimiter, and additional message parameter indications.

USE/ADVANTAGE - E.g. for providing ownership of copyrighted digital multimedia content such as audio, video or still images, and disincentive towards piracy of material. Information is very difficult to decode if correct keys are not possessed by decoder.

Dwg.0/0

Title Terms: METHOD; ENCODE; DECODE; ADD; INFORMATION; STREAM; DIGITAL; SAMPLE; SPECIAL; KEY; ENCODE; DATA; CONTAIN; SAMPLE; KEY; REQUIRE; DECODE
Index Terms/Additional Words: COPYRIGHT; PROTECTION; MULTIMEDIA
Derwent Class: T01; T03; W04
International Patent Class (Main): H04L-000/00; H04L-009/00; H04L-009/20
File Segment: EPI

1/5/32 (Item 16 from file: 350)
DIALOG(R)File 350:Derwent WPIX

010857191 **Image available**
WPI Acc No: 1996-354144/199635

Related WPI Acc No: 1995-240263
XRPX Acc No: N96-298694
Digital information exchange system for different types of data - exchanges information over transmission media by connecting modular expandable units using digital information packets in response to user programmed requests
Patent Assignee: MOSKOWITZ S A (MOSK-I)
Inventor: **MOSKOWITZ S A**
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 5539735	A	19960723	US 9383593	A	19930630	199635	B
			US 94365454	A	19941228		

Priority Applications (No Type Date): US 9383593 A 19930630; US 94365454 A 19941228
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5539735	A		10	H04J-003/26	Cont of application US 9383593 Cont of patent US 5428606

Abstract (Basic): US 5539735 A

The digital information exchange system has modular expandable units operated by publishers and subscribers which have input and output terminals with a CPU in between. The exchange has connectors to allows the modular expandable units to connect to the exchange over at least two transmission media.

The user selects the amt. and type of digital information required by issuing inputting commands to the software in each modular unit. The modular expandable units send digital information packets from one to another over the exchange in response to requests for these digital information packets.

USE/ADVANTAGE - Exchange allows for billing and other administrative functions. Provides complete multimedia system for all types of digital data, such as music, text, moving video, virtual reality etc.

Dwg.1/4

Title Terms: DIGITAL; INFORMATION; EXCHANGE; SYSTEM; TYPE; DATA; EXCHANGE; INFORMATION; TRANSMISSION; MEDIUM; CONNECT; MODULE; EXPAND; UNIT; DIGITAL ; INFORMATION; PACKET; RESPOND; USER; PROGRAM; REQUEST
Derwent Class: T01; W01
International Patent Class (Main): H04J-003/26
File Segment: EPI

1/5/33 (Item 17 from file: 350)
DIALOG(R)File 350:Derwent WPIX

010338175 **Image available**
WPI Acc No: 1995-240263/199531
Related WPI Acc No: 1996-354144
XRPX Acc No: N95-187387
Digital information packet exchange on electronic superhighway - buffering transfer of packet from publisher to subscriber so that transfer occurs asynchronously, with administrative function e.g. billing also performed
Patent Assignee: MOSKOWITZ S A (MOSK-I)
Inventor: **MOSKOWITZ S A**
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 5428606	A	19950627	US 9383593	A	19930630	199531	B

Priority Applications (No Type Date): US 9383593 A 19930630
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5428606	A		10	H04L-012/56	

Abstract (Basic): US 5428606 A

A system for the exchange of digital information packets includes an exchange with connectors to allow modular expandable units to connect to the exchange over transmission media. The modular expandable units send digital information packets from one to another over the exchange in response to requests for these digital information packets. The exchange allows for billing and other administrative functions.

Information transfer buffering is performed by both a publisher's and subscriber's modular expandable units. The desired information is analog data which is then converted to digital form by an expansion module to provide a series string of data.

ADVANTAGE - Accommodates different data types within same modular system, thus allowing for exchange of unlimited range of digital commodities.

Dwg.1/4

Title Terms: DIGITAL; INFORMATION; PACKET; EXCHANGE; ELECTRONIC; BUFFER; TRANSFER; PACKET; SUBSCRIBER; SO; TRANSFER; OCCUR; ASYNCHRONOUS; ADMINISTER; FUNCTION; BILL; PERFORMANCE

Derwent Class: T01; W01

International Patent Class (Main): H04L-012/56

File Segment: EPI

1/5/34 (Item 18 from file: 350)

DIALOG(R)File 350:Derwent WPIX

002157222

WPI Acc No: 1979-H7165B/197936

Gas turbine power plant utilising fluidised bed combustor - includes loop cooling system having two heat exchangers through which liq. metal is circulated

Patent Assignee: CURTISS WRIGHT CORP (CURT)

Inventor: COLE R W; **MOSKOWITZ S**

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 4164846	A	19790821				197936	B

Priority Applications (No Type Date): US 77854123 A 19771123

Abstract (Basic): US 4164846 A

The gas turbine power plant has a fluidised-bed combustor for the burning of coal. The plant comprises a closed circuit or loop cooling system for the fluidised-bed combustor through which is circulated liq. metal.

The cooling system includes, in the bed of the fluidised-bed combustor, a first heat exchanger by which the liquid metal absorbs heat from the bed and a second heat exchanger by which heated liquid metal is passed in indirect heat exchange with compressed air to heat the latter. The heated compressed air is mixed with the combustion products discharged from the fluidised-bed combustor at a point upstream from the gas turbines.

Title Terms: GAS; TURBINE; POWER; PLANT; UTILISE; FLUIDISE; BED; COMBUST; LOOP; COOLING; SYSTEM; TWO; HEAT; EXCHANGE; THROUGH; LIQUID; METAL; CIRCULATE

Derwent Class: Q52

International Patent Class (Additional): F02C-003/26

File Segment: EngPI

1/5/35 (Item 19 from file: 350)

DIALOG(R)File 350:Derwent WPIX

001958303

WPI Acc No: 1978-J7576A/197844

Fluid pump with plunger assembly - has slidable sleeve defining vertical channel having thermally conductive membranes forming inner and outer chambers

Patent Assignee: MOSKOWITZ S (MOSK-I)
Inventor: **MOSKOWITZ S**

Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 4102605	A	19780725				197844 B

Priority Applications (No Type Date): US 77761862 A 19770124; US 75596506 A 19750716

Abstract (Basic): US 4102605 A

The pump has a plunger assembly received within an outer housing containing a fluid. The plunger assembly includes a slidable sleeve portion defining a vertical channel. A pair of thermally conductive flexible membranes form outer and inner chambers within the vertical channel. One of the flexible membranes is detachably secured to the slidable sleeve portion, the other membrane constituting a common wall that separates the chambers.

A charging fluid is fed to the outer chamber through an inlet valve and exits through an exhaust valve. A fluid to be pumped is fed to the inner chamber through an inlet valve and exits through an exhaust valve. The charging fluid governs the interior profile within the vertical channel for providing variable pressure to volume ratios within the chamber.

Title Terms: FLUID; PUMP; PLUNGE; ASSEMBLE; SLIDE; SLEEVE; DEFINE; VERTICAL ; CHANNEL; THERMAL; CONDUCTING; MEMBRANE; FORMING; INNER; OUTER; CHAMBER
Derwent Class: Q56
International Patent Class (Additional): F04F-011/00
File Segment: EngPI

1/4

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Class/Sub-Class: 713/200			
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Journal/Book Title:	
Article Title:	
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Issue Number:	Series Number: Year of Publication:
Publisher:	
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16/3,K/1 (Item 1 from file: 275)
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01612163 SUPPLIER NUMBER: 14096937 (USE FORMAT 7 OR 9 FOR FULL TEXT)
New FITS technology poised to change digital imaging. (FITS Imaging Inc. Live Picture) (News Analysis) (Product Announcement)
Fraser, Bruce
MacWEEK, v7, n31, p36(2)
August 2, 1993
DOCUMENT TYPE: Product Announcement ISSN: 0892-8118 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 1556 LINE COUNT: 00124

...ABSTRACT: traditional barriers to processing of very large images on desktop platforms and could fundamentally alter **digital image** handling. The product, implemented entirely in software, will be released in the US by HSC Software in Sep 1993 for $3,495. It uses new technology that combines **preprocessing** , image editing and a proprietary raster image processing (RIP) technique. Image data is converted into...

16/3,K/2 (Item 2 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)
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01611278 SUPPLIER NUMBER: 13922821 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Hardware-software combo could simplify MPEG real-time video compression. (MasPar Computer Corp. hardware and Prism Interactive Corp. encoder software)
Nass, Richard
Electronic Design, v41, n9, p36(1)
May 3, 1993
ISSN: 0013-4872 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 802 LINE COUNT: 00065

... operate on 1.5-Mbit/s T1 lines. By altering the spatial filter coefficients for **preprocessing** operations, the spatial **noise** or selective high- **frequency** content of video **images** can be reduced. The encoder also supports various nonlinear filters for temporal **preprocessing** to reduce noise from misaligned field **images** and increase frame-to-frame correlation. The input subsampling rate is selectable, so variable-size...

16/3,K/3 (Item 3 from file: 275)
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01584752 SUPPLIER NUMBER: 13429168 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Image processing, part 9: histogram-based image segmentation. (Tutorial)
Phillips, Dwayne
C Users Journal, v11, n2, p63(22)
Feb, 1993
DOCUMENT TYPE: Tutorial ISSN: 0898-9788 LANGUAGE: ENGLISH
RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 3309 LINE COUNT: 00252

... You will need other techniques to attack more complex images.

References

Castleman, Kenneth R. 1979. **Digital Image** Processing. Prentice-Hall.

Phillips, Dwayne. August 1991. "Image Processing, Part 4: Histograms and Histogram Equalization," The C Users Journal.

Phillips, Dwayne. October 1992. "Image Processing, Part 7: Spatial **Frequency Filtering** ," The C Users Journal.

The author works as a computer and electronics engineer with the...

01611278 SUPPLIER NUMBER: 13922821 (THIS IS THE FULL TEXT)

Hardware-software combo could simplify MPEG real-time video compression. (MasPar Computer Corp. hardware and Prism Interactive Corp. encoder software)

Nass, Richard

Electronic Design, v41, n9, p36(1)
May 3, 1993
ISSN: 0013-4872 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 802 LINE COUNT: 00065

ABSTRACT: Real-time software-based video compression that is compatible with the Motion Picture Experts Group (MPEG) specifications is possible due to the joint efforts of Prism Interactive Corp and MasPar Computer Corp. MasPar's massively-parallel hardware platform, which can perform at 68,000 MIPS, and Prism's encoder software together can process the massive amounts of data in a short time. The MasPar/Prism system, which costs between $250,000 and $1.5 million, offers affordable broadcast-quality video data compression for playback on MPEG decoder hardware. Now telephone-network data transmission, cable television services and direct-broadcast satellite applications are free from problems with low-speed transmission and bandwidth multiplication. The output of Prism's encoder can be adjusted to get the best image quality at a low bit rate. The compression systems will be available in the 3d qtr 1993.

TEXT:

Displaying digital video that's compatible with the MPEG (Motion Picture Experts Group) video-compression specification in real-time is the goal of many systems designers. But to do it in real time means processing a massive amount of data in a short time span.

An affordable real-time, software-based solution for video compression was previously thought to be impossible with today's hardware. However, a joint effort between MasPar Computer Corp., Sunnyvale, Calif., and Prism Interactive Corp., Wheaton, Ill., could solve the problem. Prism supplies the encoder software, while MasPar adds a massively-parallel hardware platform to perform the compute-intensive process. Peak performance on the MasPar system comes in at 68,000 MIPS.

Digital video compression offers answers to the challenging issues of economical storage, lowspeed transmission, and bandwidth multiplication for such applications as direct-broadcast satellite, data transmission over telephone networks, and cable-television services. Previously, there was no affordable way to compress broadcast-quality video data in real-time for playback on standard MPEG decoder hardware. Using the MasPar/Prism system, the compression ratio averages about 120:1.

A key feature of the Prism encoder is that its output can be optimized for a particular target-decoder design to maximize image quality at the lowest possible bit rate. This allows a video-on-demand service provider (such as a cable company) to minimize centralized disk storage while fully exploiting available system bandwidth. The compression systems will sell for about $250,000 to $1.5 million, and will be available in the third quarter.

At the other end of the transmission medium, where the video is to be displayed, some type of decompression must occur. But MPEG compression is asymmetrical, which means the motion vector is a known quantity on the decoder side. Therefore, all that's required is to simply add it back in, instead of recalculating. In fact, many companies decode with an ASIC solution, making the decoders affordable even for consumers.

Today's low-cost (under $250,000) MPEG compression systems are designed for low-bit-rate applications at under 2 Mbits/s. The quality, though, is below current broadcast standards when viewing the decompressed video--visual artifacts, such as dropped frames and tiling, creep in. Tiling occurs when one block of information forms a rectangular shape of pixels that isn't quite in place. Several of these in one area make them

appear as tiles. Software handles this by addressing the quantization levels on a specific image.

While these low-cost systems may suit personal multimedia systems or teleconferencing, they don't address the needs of true-broadcast-quality applications. High-quality compression systems built from custom hardware can be costly and may only fit specific applications.

Because the encoding is done in software, it can adapt to any target video resolution or data rate, including all standard formats and bit rates. The encoder's output can also be optimized for a particular target decoder to maximize image quality. In fact, the output can be generated to any format, resolution, or bit rate required by the application, as long as the system can support the desired compression rates and quality.

The encoder can be tuned to trade off video quality for compression speed using two methods. First, as users interact with the encoder, preprocessing to improve quality involves experimentation with various filters and changes to the coefficients used in the filter. Quality is enhanced by adpting the preprocessing filters to a specific piece of video. With the second method, once the parameters are set, the encoder can replicate an operation by automatically looping through the various preprocessing and encoding functions until the quality criteria is met. The higher the quality that's desired, the more loops that occur, ultimately trading off compression speed for video quality.

Another advantage to having the compression scheme in software is that the software can be adapted to follow the evolving MPEG compression standard. Prism is developing software for MPEG-2, a standard that has yet to be finalized.

The software is designed to produce high quality at the lowest possible bit rates, which are driven by the limitations of the transmission medium. Applications such as video-on-demand will operate on 1.5-Mbit/s T1 lines. By altering the spatial filter coefficients for preprocessing operations, the spatial noise or selective high-frequency content of video images can be reduced. The encoder also supports various nonlinear filters for temporal preprocessing to reduce noise from misaligned field images and increase frame-to-frame correlation. The input subsampling rate is selectable, so variable-size pictures can be processed.

COMPANY NAMES: MasPar Computer Corp.--Product development; Prism Interactive Corp.--Product development
DESCRIPTORS: Real-Time System; Digital video; Product Development; Standard
SIC CODES: 3577 Computer peripheral equipment, not elsewhere classified; 7371 Computer programming services
FILE SEGMENT: TI File 148
?

7/4

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Article Title:	
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Issue Number:	Series Number: Year of Publication:
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01572535 SUPPLIER NUMBER: 14624749
On 3-D real-time perspective generation from a multiresolution photo-mosaic data base. (Technical)
Hooks, John T., Jr.; Martinsen, Garth J.; Devarajan, Venkat
CVGIP: Graphical Models and Image Processing, v55, n5, p333(13)
Sept, 1993
DOCUMENT TYPE: Technical ISSN: 1049-9652 LANGUAGE: ENGLISH
RECORD TYPE: ABSTRACT

...ABSTRACT: processing speed requirements and the input database size. It is assumed that a multiple resolution, **digital photo** -mosaic of a gaming area is available: the mosaic is comprised of several photographs and...

...created via scanning, digitizing, radiometric and geometric balancing, registration with elevation data, tiling, and other **preprocessing** steps. Multiple-resolution versions of the mosaic can be generated using techniques similar to those...

16/3,K/5 (Item 5 from file: 275)
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01557558 SUPPLIER NUMBER: 14624306
Contrast enhancement using the Laplacian-of-a-Gaussian filter. (Technical)
Neycenssac, Franck
CVGIP: Graphical Models and Image Processing, v55, n6, p447(17)
Nov, 1993
DOCUMENT TYPE: Technical ISSN: 1049-9652 LANGUAGE: ENGLISH
RECORD TYPE: ABSTRACT

ABSTRACT: A time-saving method for enhancing contrast in degraded **digital images** is developed. It has advantages over Marr-Hildreth edge detection but is not preferable to equalization contrast enhancement unless control over which **frequencies** will be enhanced is desired. The proposed **filtering** technique mimics human peripheral vision by performing the Laplacian-of-a-Gaussian (LoG) on the...

...3 x 3 Laplacian as suggested by Rosenfeld. The LoG method is affected less by **noise** , and only one **filter** is needed per **frequency** range enhanced. Sampling and image border problems are addressed with the Fourier transform. Electron micrographs and **digitized photographs** are LoG enhanced and compared with images enhanced via calibration, equalization and the Prewitt-Rosenfeld...

(44) ordered

16/3,K/6 (Item 6 from file: 275)
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01502752 SUPPLIER NUMBER: 11944065 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Video teleconferencing: the state of the art. (includes related article on video teleconferencing standards)
Thuston, Francine
Telecommunications, v26, n1, p63(3)
Jan, 1992
ISSN: 0278-4831 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 2138 LINE COUNT: 00181

... decoded back into analog voice and video. There are four steps to video codec technology:

* **preprocessing** -- removes high- **frequency noise** ,
* encoding -- each block of the **picture** , ranging from 8 x 8 to 16 x 16 pixels in size is digitized,

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Journal/Book Title:	
Article Title:	
Volume Number:	Report Number: Pages:
Issue Number:	Series Number: Year of Publication:
Publisher:	
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* decoding...

16/3,K/7 (Item 7 from file: 275)
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01419430 SUPPLIER NUMBER: 09394494 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Recognizing patterns. (AI Apprentice - column) (tutorial)
Minasi, Mark
AI Expert, v6, n2, p15(3)
Feb, 1991
DOCUMENT TYPE: tutorial ISSN: 0888-3785 LANGUAGE: ENGLISH
RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 1321 LINE COUNT: 00100

... PC to a scanner, and you can convert old paper documents into machine-readable form.
* **Digital image** processing, which lets us see those fantastic pictures that Voyager brought back.
* Digital sound processing...

...Readers of Tom Clancy's Hunt For Red October remember that computers are used to **filter** out **noise** when subhunting, but humans are needed to separate the wheat from the chaff--for now...

16/3,K/8 (Item 8 from file: 275)
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01373736 SUPPLIER NUMBER: 09468045 (USE FORMAT 7 OR 9 FOR FULL TEXT)
PC scanners: not just for high-end users anymore. (Lab Notes; includes related glossary) (column)
Alford, Roger C.
PC Magazine, v9, n17, p403(9)
Oct 16, 1990
DOCUMENT TYPE: column ISSN: 0888-8507 LANGUAGE: ENGLISH
RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 7681 LINE COUNT: 00596

... file to text and send ASCII characters to the PC.
Most scanners, however, do not **preprocess** the image data. The unprocessed **digital image** data is simply transferred to the computer, where it is typically stored in a disk...

16/3,K/9 (Item 9 from file: 275)
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01369845 SUPPLIER NUMBER: 08755438 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Videoconferencing standards.
Luhmann, Rick
Teleconnect, v8, n8, p62(3)
August, 1990
ISSN: 0740-9354 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 1814 LINE COUNT: 00141

... these guys is a four-step process, with each step making a big impact on **picture** quality along the way.
First, there's **pre - processing** which gets rid of high- **frequency noise** from the digitized **picture** . The better a signal is **pre - processed** , the higher its potential quality. (Again, no matter how much **pre - processing** occurs, though, if a transmission conforms to the H.261 standard, it can be received...

01369845 SUPPLIER NUMBER: 08755438 (THIS IS THE FULL TEXT)

Videoconferencing standards.

Luhmann, Rick

Teleconnect, v8, n8, p62(3)
August, 1990
ISSN: 0740-9354 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 1814 LINE COUNT: 00141

ABSTRACT: There have been two major obstacles preventing the widespread use of videoconferencing. The first is the high-bandwidth requirements; this has been taken care of. The second is the lack of standards on how the codec should encode and decode the signal, meaning systems are not compatible with each other. The International Telegraph and Telephone Consultative Committee (CCITT) has been working on standards since 1984 and has now decided to establish standards that run across the spectrum of bandwidths. The standards are scheduled to be presented in Jul 1990. The video standard is H.261, also called Px64; it is based on channel rate multiples of 64K-bps. H.261 standardizes how video codecs decode the bit stream; it says nothing about how the signal is to be encoded. H.261 should mean that videoconferencing will become more popular and in more common use.

TEXT:

Ever since the 1964 World's Fair in New York, when AT&T exhibited a product called the Picturephone, people have been fascinated with the sci-fi concept of seeing people live as they talk to them on the telephone.

That product, however, required a bandwidth of 90 Mbps. So nobody even remotely considered buying one, even if it was fun to think about it. In fact, though full-motion videophone makers have come a long way in compression techniques, the market is still tiny compared to other telecom equipment markets.

There's been two major obstacles preventing videoconferencing from really taking off. Me first was the above-mentioned high-bandwidth requirements. Initially, those requirements relegated videoconferencing to a private-network application. Expensive.

But that obstacle has already been hurdled for some time now. As far back as 1987, people were marketing low-bandwidth, proprietary codecs needing between 56 to 384 Kbps. Throw in the additional innovation and availability of switched 64 Kbps services and affordable T-1 circuits, and you have the makings for an appealing application, even if you're not a Fortune 500 company.

But now for obstacle number two. We hinted at it above when we mentioned proprietary. Yes, makers can compress video and send it over the publicly "switched" (see Steve Ditto's tutorial on the subject) network. Thus, you don't have to set up an expensive private-network transmission medium. Yet there are no governing standards on how the codec should transmit and receive (encode and decode) the signal. Thus, different systems are not compatible with each other.

Obviously, this drags the application down a bit. It still pretty much makes it inter-company. And it jacks up the price of a videoconferencing system too, since a user has to buy both ends of the hop. It would be like fax without a Group Ill standard. People with Xerox machines could only fax other people with Xerox machines. Not very logical.

The logic of video standards, however, is not something that has escaped the videoconferencing industry and, more importantly, the CCITT (Consultive Committee for International Telephony and Telegraph). Ever since 1984, the CCITT has been trying to accommodate a standard for telecom video transmission. The problem was they couldn't keep up with the incredible improvements in compression techniques.

Every time they came up with a working standard it was overcome by the market's needs for less bandwidth-intensive (and thus less costly) equipment and the codec maker's let's-make-the-end-user-happy advances. Finally, they gave up the idea of zeroing in on one particular transmission

rate (like regulating videoconferencing in multiples of 384 Kbps) and started setting up standards that would run across the spectrum of bandwidths - from low-end rates (56 Kbps in the US and 64 Kbps in most of the world) to the European T-1 rate of 2.048 Mbps.

It looks like a winning strategy. In July 1990 (this story, unfortunately, was written in june), in Geneva, the CCITT is expected to recommend adoption of five out of a total of 10 or more standards for videoconferencing.

Although it will be a year or more before all the regulations kick in, these standards should ultimately give videoconferencing the worldwide compatibility and connectivity the market has been screaming for. Things might go boom.

VIDEO STANDARD

We alluded to fax previously to make a point. But it wasn't completely fair. Full-motion video transmission, of course, is a lot more complicated than that. It has to broken down into several manageable, distinct categories.

We can't touch upon them all. Many are still being worked on. Nor can we go into complete detail. It's complicated stuff. But we'll highlight the most visible of the pending standards - the video portion - and talk about how it's going to influence the market.

The video standard is CCITT's H.261 or Px64 (P times 64) as a lot of people are calling it. Based on channel rate multiples of 64 Kbps, it will standardize the way in which video codecs decode the bit stream.

It gets pretty technical. H.261 is a discrete cosine transform (DCT)-based, motion-compensated, Differential Pulse Code Modulation (DPCM) algorithm. Is that a mouthful or what?

They chose it over the other alternatives because it has the greatest flexibility as far as picture-coding requirements go, at both ends of the bandwidth spectrum. It also has the most "head room," i.e. potential for improvement.

There's an important point to make here. Yes, this standard provides a uniform process for the codecs to read the signals coming across the network. But it only standardizes how they decode the signal. Different makers can still encode the signal any way they want.

This means that picture quality will still vary from one codec manufacturer to another. It's kind of like buying a new TV. All TVs can receive broadcast signals, but no two makers produce the image on the screen exactly the same. Some are better than others. So, too, will some codecs be able to take this standard signal and transform it into a better high-resolution, better motion-handling picture.

Within the H.261 standard, codec makers have plenty of room to distinguish their products. Basically, preparing a picture for these guys is a four-step process, with each step making a big impact on picture quality along the way.

First, there's pre-processing, which gets rid of high-frequency noise from the digitized picture. The better a signal is pre-processed, the higher its potential quality. (Again, no matter how much pre-processing occurs, though, if a transmission conforms to the H.261 standard, it can be received by any other codec that meets the standard's specs.)

Next comes encoding. Using a series of mathematical transformations, each block of the picture (ranging from eight by eight to 16 by 16 pixels in size, depending on the procedure) is encoded. How efficiently and economically this is done is a key factor in quality. There are a bunch of very complicated ways this can be done, but, without getting into the tricky details, it does significantly affect the transmission process and resulting picture quality on the other end of the hop. Trust us.

On the receiving end, the digital bit stream is decoded according to the process spelled out in the standard. Once decoded, however, the signal can go through post-processing, which adds further quality to the picture by once again removing noise and unwanted glitches.

The CCITT will not set standards for pre-processing, encoding and post-processing. It's all open territory.

There's a cruel footnote here: if you have a snazzy, expensive videoconference system and you're transmitting to some slob with a cheapie

system, he gets all the benefits of your system and you get nothing from him, since his machine will at least decode according to the standard. Such is life.)

WHAT IT MEANS TO YOU NOW

First, end user, start thinking about videoconferencing and familiarizing yourself with the equipment. There's no doubt that as these standards develop and lead to widespread connectivity and compatibility (and lower prices), most companies, we think, can find a juicy videoconferencing application within their business.

But remember, between now and mid-1992, the standards won't make all the connectivity problems go away. They're no instant cure. It'll still be a far more complicated purchase than a fax machine (actually, it always will be). And you'll be faced with some tough choices.

For example, right now there's no audio standard for low-bandwidth videoconferencing (though it looks like they're going to settle on allocating 16 Kbps to audio in low-bandwidth applications). This application is the most accessible and therefore the one that probably fits your needs.

So if you go the standards route, and buy a codec that conforms to H.261, you'll need to arrange for a separate audio line when you're talking with another maker's system, which defeats the cost-effectiveness of low-bandwidth videoconferencing in the first place. Staying proprietary, though cutting down on the flexibility of whom you can transmit to, does alleviate such a problem.

You also have to consider that there's an installed base of codecs already out there. At least for the time being, the proprietary modes of some manufacturers - which have been developed and refined for years - are better than future standard quality is going to be.

The best solution during this transitional period lies in codecs that can support several different kinds of modes - both standard and proprietary - while also adapting to the continually changing standards and user requirements. Remember, all of the standards won't be ready at the same time. So you might need to change your system piecemeal as things change. You'll need to adapt.

Compression Labs Inc's (CLI - San Jose, CA) Rembrandt II line of codecs are a good example of systems that can adapt. They support both the new Px64 standards as well as the existing base of nearly 2,000 Rembrandt and Rembrandt 56 codecs. At the same time, the first model in the new line - the Rembrandt II/06 - includes a new proprietary low-bandwidth operating mode that gives you, somewhat ironically, a better picture than the initial low-bandwidth standard does. (But they can live with that, standards will help their industry.)

As for partial changes as different standards come into play, users should look for portable software and modular architecture so the can keep up. Something along the lines of CLI's FLEX5 architecture in the previously mentioned Rembrandt IIs. It's both software programmable and board expandable to meet new power, operating or standard needs quickly and efficiently - as you need to change.

And you will. It's the one constant in the history of the videoconferencing market (ever since 1964) - change.

However, the first of these standards should lay a solid foundation for more stable, worldwide dial-up (the carriers don't have to do a thing with any of these standards) video communication, improved picture quality and new small-business applications. And as more people start to buy them because of these new opportunities, of course, you'll start seeing the prices go down (even further).

All of which might have you, if you're not using videoconferencing equipment already, kicking your heels and shouting, "Move over Buck Rogers, I can do this videoconference thing too!" Just make sure you do your homework.

DESCRIPTORS: Standard; Videoconferencing; International Telegraph and Telephone Consultative Committee

4/4

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Patent and Trademark Office

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16/3,K/10 (Item 10 from file: 275)
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01338560 SUPPLIER NUMBER: 08834842
Digitized photos meet deadline. (On Site)
Anthes, Gary H.
Computerworld, v24, n37, p63(1)
Sept 10, 1990
ISSN: 0010-4841 LANGUAGE: ENGLISH RECORD TYPE: ABSTRACT

...ABSTRACT: minutes before press time by bypassing traditional photo processing and sending images directly to a **digital photo** editing center. Sony Corp electronic still cameras are used and then, aided by a digital **preprocessor** , are sent via telephone to an electronic darkroom at headquarters. The actual selection of photographs...

16/3,K/11 (Item 11 from file: 275)
DIALOG(R)File 275:Gale Group Computer DB(TM)
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01323474 SUPPLIER NUMBER: 08369208
Engineering drawing processing and vectorization system. (technical)
Nagasamy, Vijay; Langrana, Noshir A.
Computer Vision, Graphics & Image Processing, v49, n3, p379(19)
March, 1990
DOCUMENT TYPE: technical ISSN: 0734-189X LANGUAGE: ENGLISH
RECORD TYPE: ABSTRACT

ABSTRACT: Methods are presented for **preprocessing** and vectorizing scan **digitized images** of engineering drawings for transferring the resulting data to commercially available CAD/CAM systems. **Preprocessing** steps include void filling, **noise** removal, image segmentation, contour extraction and line thinning. Algorithms are presented for raster-to-vector ...

16/3,K/12 (Item 12 from file: 275)
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01249787 SUPPLIER NUMBER: 06525381 (USE FORMAT 7 OR 9 FOR FULL TEXT)
From noise comes beauty. (generating textures in computer graphics) (technical)
Pickover, Clifford
Computer Graphics World, v11, n3, p115(2)
March, 1988
DOCUMENT TYPE: technical ISSN: 0271-4159 LANGUAGE: ENGLISH
RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 847 LINE COUNT: 00064

... the image at that point. This averaging procedure acts as a kind of low-pass **filter** , and I call the image it produces a " **noise** gram."
The next step is to enhance some of the contours of the noise gram and bring out certain features. This is done by transforming the **digitized image** via a look-up table (LUT) computed from a sinusoidal function of the form f...

16/3,K/13 (Item 13 from file: 275)
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01236565 SUPPLIER NUMBER: 06333859 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Distributed control and localized processing power will shape avionics. (1988 Technology Forecast)
Denton, Richard

01249787 SUPPLIER NUMBER: 06525381 (THIS IS THE FULL TEXT)
From noise comes beauty. (generating textures in computer graphics) (technical)
Pickover, Clifford
Computer Graphics World, v11, n3, p115(2)
March, 1988
DOCUMENT TYPE: technical ISSN: 0271-4159 LANGUAGE: ENGLISH
RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 847 LINE COUNT: 00064

ABSTRACT: It is easy to create computer graphics patterns that resemble natural and artistic textures by using a simple algorithm to manipulate the random noise produced by a random-number generator on a microcomputer. The process is started by creating an array of random numbers from 0 to 225 in which 1 indicates white and 225 indicates black. A mathematical function can then create a local average of this noise. Some of the contours of the noise may be enhanced to bring out certain features by using a look-up table computed from a sinusoidal function to transform the digitized image. Next, histogram equalization results in good contrast in the texture. Finally, the resulting map is half-toned by damped error diffusion. Users can create structure from noise with these tools and produce original art.
TEXT:

From Noise Comes Beauty

Over the years, various professions have shown remarkable ingenuity in developing ways to create patterns that resemble natural and artistic textures. For example, manufacturers of paper products create "marbled paper" by dripping oil into a large vat of water. The craftsperson swirls or blows on the surface until an interesting pattern emerges, then the pattern is transferred by placing the paper onto the liquid's surface.

Now, with the emergence of powerful graphics workstations, more research is being devoted to understanding ways the computer can be used to create such complex surfaces as marble, rippling water, and fire.

But it's not only users of high-end computer equipment that can experiment with texture-creation techniques. Keeping in mind that math and art are inextricably linked, anyone from the home-computer artist to the working scientist can generate magnificent textures and images of startling intricacy on a simple PC by using the barest and simplist of algorithms to manipulate the random noise produced by a random-number generator--generators that are available in most standard programming languages including BASIC.

Assuming one has access to a PC, a random-number generator, and a simple averaging computer subroutine, the first step is to create an array of random numbers ranging from 0 to 255, where 0 indicates white in the final picture and 255 indicates black. Intermediate values represent gray levels. For many of the figures I created, I first performed a local averaging of this noise. The function that produces an image in which each pixel represents the average of the neighborhood around the corresponding point in the original image is

In this function, n defines the size of the neighborhood. Larger values for n force more correlations in the noise. I.sub.(xy) is a monochrome image and refers to a 2D light intensity function where x and y denote spatial coordinates, and the value at I at any point (x, y) is proportional to the brightness or gray level of the image at that point. This averaging procedure acts as a kind of low-pass filter, and I call the image it produces a "noise gram."

The next step is to enhance some of the contours of the noise gram and bring out certain features. This is done by transforming the digitized image via a look-up table (LUT) computed from a sinusoidal function of the form f(k)=255 x\ sin [fxl]\ where l.sub.e[0[deg.], 360[deg.]. Using this technique, a graphically continuous lookup table function can be produced with a small number of input parameters. By exploring a variety of frequencies (f) for the sine wave, certain trends in the noise gram can be

visually emphasized. In order to use f(x) to transform the noise gram, the value of each (x,y) element of the resultant picture is obtained by taking the k element in f(k), where k is the value (intensity) of the element at (x,y) in the original image. This approach produces a continuous gray-scale change.

Subsequent to using the look-up-table transformation, histogram equalization is performed in order to achieve a good contrast in the textures' features. Histogram equalization takes a raster of intensities, plots the number of times each intensity occurs, and then creates a mapping from the original intensities to a new set so that each intensity level occurs with approximately equal frequency.

Finally, the map is halftoned using damped error diffusion. Halftoning is a method of changing an image that has pixels with many different intensity values to an image with only two values--black and white. The basic idea is to use patterns of black and white to give the impression of intermediate intensities.

Both halftoning and damped error diffusion are useful for monochrome pictures. However, if users do not have access to these techniques, very interesting pictures can be achieved simply by mapping the values of I.sub.(x,y) to colors. In fact, creating color images s actually easier than creating images that use levels of gray.

For those who want to create black and white images with no additional gray levels, the trick is to clip the sinusoid in the second equation listed above, such that: f(k)=0 if int f(k) < 125 f(k)=255 if int f(k) > 125 where 0 represents white and 255 represents black. Readers are urged to experiment with other LUTs, such as sin.sup.2 (f x l), and sin.sup.2 (f x l) x cos.sup.2 (f x l).

Indeed, the more one experiments, the more one appreciates the way in which the balance of randomness and order affects the degree to which the human eye considers a pattern beautiful. It is the total absence of structure, for example, that makes a TV test pattern unattractive. But with the tools discussed here, users can create structure and produce new pieces of art.

DESCRIPTORS: Computer Graphics; Random Number Generation; Noise; Computer Art; Tutorial
FILE SEGMENT: CD File 275
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Set     Items   Description
S1      16247   AU=(RHOADS, G? OR RHOADS G? OR ALATTAR, A? OR ALATTAR A? OR
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         (c) 2004 IDG Communications
File 696:DIALOG Telecom. Newsletters 1995-2004/Aug 10
         (c) 2004 The Dialog Corp.
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2/5/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

8038933 INSPEC Abstract Number: B2004-09-6135C-074, C2004-09-5260B-137
Title: Reversible watermark **using difference expansion of quads**
Author(s): **Alattar, A.M.**
Author Affiliation: Digimarc Corp., Tualatin, OR, USA
Conference Title: 2004 IEEE International Conference on Acoustics, Speech, and Signal Processing Part vol.3 p.iii-377-80 vol.3
Publisher: IEEE, Piscataway, NJ, USA
Publication Date: 2004 Country of Publication: USA 5 vol. (cix+1045) pp.
ISBN: 0 7803 8484 9 Material Identity Number: XX-2004-01321
U.S. Copyright Clearance Center Code: 0-7803-8484-9/04/$20.00
Conference Title: 2004 IEEE International Conference on Acoustics, Speech, and Signal Processing
Conference Date: 17-21 May 2004 Conference Location: Montreal, Que., Canada
Language: English Document Type: Conference Paper (PA)
Treatment: Theoretical (T); Experimental (X)
Abstract: A reversible **watermarking** algorithm with very high data hiding capacity has been developed for colored images. The algorithm allows the **watermarking** process to be reversed to restore the original image exactly. The algorithm hides triplets of bits in the difference expansion of quads of adjacent pixels. The necessary difference expansion transform and its inverse is derived for quads. Also, the necessary conditions to avoid under- and overflow are derived. The algorithm can also be applied recursively, to maximize the amount of data that can be hidden into an image. Simulation results show that the algorithm can hide a bit-rate as high as 3.3 bits/colored pixel while maintaining an image quality level of 33.5 dB. (9 Refs)
Subfile: B C
Descriptors: data encapsulation; image coding; image colour analysis; transform coding; **watermarking**
Identifiers: reversible **watermarking** algorithm; data hiding capacity; colored images; quad difference expansion; adjacent pixels; difference expansion transform; inverse transform; underflow; overflow; recursive algorithm
Class Codes: B6135C (Image and video coding); C5260B (Computer vision and image processing techniques); C6130S (Data security); C6120 (File organisation)

2/5/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

7983905 INSPEC Abstract Number: B2004-07-6135C-257, C2004-07-5260B-506
Title: Reversible watermark **using difference expansion of triplets**
Author(s): **Alattar, A.M.**
Author Affiliation: Digimare Corp., Tualatin, OR, USA
Conference Title: Proceedings 2003 International Conference on Image Processing (Cat. No.03CH37429) Part vol.1 p.I-501-4 vol.1
Publisher: IEEE, Piscataway, NJ, USA
Publication Date: 2003 Country of Publication: USA 3 vol.(lxxii+1138+1126+1094) pp.
ISBN: 0 7803 7750 8 Material Identity Number: XX-2002-01308
U.S. Copyright Clearance Center Code: 0 7803 7750 8/2003/$17.00
Conference Title: Proceedings of International Conference on Image Processing
Conference Sponsor: IEEE Signal Process. Soc
Conference Date: 14-17 Sept. 2003 Conference Location: Barcelona, Spain
Medium: Also available on CD-ROM in PDF format

Language: English Document Type: Conference Paper (PA)
Treatment: Theoretical (T)
Abstract: A new reversible **watermarking** algorithm based on the difference expansion of colored images has been developed. Since the **watermark** is completely reversible, the original image can be recovered exactly. The algorithm uses spatial and spectral triplets of pixels to hide pairs of bits, which allows the algorithm to hide a large amount of data. A spatial triplet is any three pixel values selected from the same spectral component, while a spectral triplet is any three pixel values selected from different spectral components. The algorithm is recursively applied to the rows and columns of the spectral components of the image and across all spectral components to maximize the hiding capacity. Simulation results show that the hiding capacity of the algorithm is very high and the resulting distortion is low. (9 Refs)
Subfile: B C
Descriptors: image restoration; **watermarking**
Identifiers: reversible **watermark** algorithm; colored images difference expansion; image reconstruction; spatial triplet; spectral triplet; spectral components; hiding capacity
Class Codes: B6135C (Image and video coding); C5260B (Computer vision and image processing techniques); C6130S (Data security)

2/5/3 (Item 3 from file: 2)
DIALOG(R)File 2:INSPEC

7960378 INSPEC Abstract Number: B2004-06-6135C-295, C2004-06-5260D-197
Title: Digital watermarking **of low bit-rate advanced simple profile MPEG-4 compressed video**
Author(s): **Alattar, A.M.** ; Lin, E.T.; Celik, M.U.
Author Affiliation: Digimare Corp., Tualatin, OR, USA
Journal: IEEE Transactions on Circuits and Systems for Video Technology vol.13, no.8 p.787-800
Publisher: IEEE,
Publication Date: Aug. 2003 Country of Publication: USA
CODEN: ITCTEM ISSN: 1051-8215
SICI: 1051-8215(200308)13:8L.787:DWRA;1-I
Material Identity Number: 0647-2004-007
U.S. Copyright Clearance Center Code: 1051-8215/03/$17.00
Language: English Document Type: Journal Paper (JP)
Treatment: New Developments (N); Practical (P); Experimental (X)
Abstract: A novel MPEG-4 compressed domain video **watermarking** method is proposed and its performance is studied at video bit rates ranging from 128 to 768 kb/s. The spatial spread-spectrum **watermark** is embedded directly into compressed MPEG-4 bitstreams by modifying DCT coefficients. A synchronization template combats geometric attacks, such as cropping, scaling, and rotation. The method also features a gain control algorithm that adjusts the embedding strength of the **watermark** depending on local image characteristics, increasing **watermark** robustness or, equivalently, reducing the **watermark** 's impact on visual quality. A drift compensator prevents the accumulation of **watermark** distortion and reduces **watermark** self-interference due to temporal prediction in inter-coded frames and AC/DC prediction in intra-coded frames. A bit-rate controller maintains the bit rate of the **watermarked** video within an acceptable limit. The **watermark** was evaluated and found to be robust against a variety of attacks, including transcoding, scaling, rotation, and noise reduction. (38 Refs)
Subfile: B C
Descriptors: data compression; data encapsulation; discrete cosine transforms; synchronisation; transform coding; video coding; **watermarking**
Identifiers: digital **watermarking** ; MPEG-4 compressed video; video **watermarking** ; spatial spread-spectrum **watermark** ; DCT coefficients; synchronization template; geometric attacks; gain control algorithm; **watermark** distortion; self-interference; inter-coded frames; intra-coded frames; transcoding; noise reduction; scaling; rotation; 128 to 768 kbit/s

Class Codes: B6135C (Image and video coding); C5260D (Video signal processing)
Numerical Indexing: bit rate 1.28E+05 to 7.68E+05 bit/s

2/5/4 (Item 4 from file: 2)
DIALOG(R)File 2:INSPEC

7798402 INSPEC Abstract Number: B2004-01-6135C-086, C2004-01-5260D-087
Title: Watermarking **low bit-rate Advanced Simple Profile MPEG-4 bitstreams**
Author(s): **Alattar, A.M.** ; Lin, E.T.; Celik, M.U.
Author Affiliation: Digimarc Corp., Tualatin, OR, USA
Conference Title: 2003 IEEE International Conference on Acoustics, Speech, and Signal Processing (Cat. No.03CH37404) Part vol.3 p. III-513-16 vol.3
Publisher: IEEE, Piscataway, NJ, USA
Publication Date: 2003 Country of Publication: USA 6 vol.(xcviii+927+852+788+883+823+764) pp.
ISBN: 0 7803 7663 3 Material Identity Number: XX-2003-01650
U.S. Copyright Clearance Center Code: 0-7803-7663-3/03/$17.00
Conference Title: Proceedings of International Conference on Acoustics, Speech and Signal Processing (ICASSP'03)
Conference Sponsor: IEEE Signal Process, Soc
Conference Date: 6-10 April 2003 Conference Location: Hong Kong, China
Medium: Also available on CD-ROM in PDF format
Language: English Document Type: Conference Paper (PA)
Treatment: Theoretical (T); Experimental (X)
Abstract: This paper presents a novel **watermarking** method for low bit-rate video that is compressed according to the Advanced Simple Profile of MPEG-4. A spatial spread spectrum **watermark** was embedded directly to the MPEG-4 bit-streams by adopting Hartung's approach of **watermarking** MPEG-2 compressed bitstreams. A synchronization template was employed to combat cropping, scaling, and rotation. A gain control algorithm adjusts the local strength of the **watermark** depending on local image characteristics, in order to maximize **watermark** robustness and to minimize the impact on the quality of the video. A drift compensator prevents the accumulation of **watermark** distortion and reduces inter-frame interference of **watermark** signals due to motion compensated prediction in inter-coded frames. The developed **watermarking** algorithm was tested at bit-rates ranging from 128-768 Kbit/s. The **watermark** 's impact on visual quality as well as its robustness after decompression, scaling, rotation, sharpening, and noise reduction was evaluated. (8 Refs)
Subfile: B C
Descriptors: data compression; data encapsulation; gain control; motion compensation; spread spectrum communication; synchronisation; video coding; **watermarking**
Identifiers: **watermarking** ; Advanced Simple Profile; MPEG-4 bitstreams; low bit-rate video; video compression; spatial spread spectrum **watermark** ; embedding; Hartung approach; synchronization template; gain control algorithm; local strength; local image characteristics; cropping; scaling; rotation; **watermark** robustness; video quality; drift compensator; **watermark** distortion; inter-frame interference; motion compensated prediction; inter-coded frames; visual quality; decompression; sharpening; robustness; noise reduction; 128 to 768 Kbit/s
Class Codes: B6135C (Image and video coding); C5260D (Video signal processing); C6130S (Data security); C6120 (File organisation)
Numerical Indexing: bit rate 1.28E+05 to 7.68E+05 bit/s

2/5/5 (Item 5 from file: 2)
DIALOG(R)File 2:INSPEC

7755927 INSPEC Abstract Number: B2003-11-6135C-206, C2003-11-5260B-219
Title: Watermark **re-synchronization using log-polar mapping of image autocorrelation**
Author(s): **Alattar, A.M.** ; Meyer, J.
Author Affiliation: Digimarc Corp., Tualatin, OR, USA
Conference Title: Proceedings of the 2003 IEEE International Symposium on Circuits and Systems (Cat. No.03CH37430) Part vol.2 p.II-928-31 vol.2
Publisher: IEEE, Piscataway, NJ, USA
Publication Date: 2003 Country of Publication: USA 5 vol.(ci+1076+962+941+915+840) pp.
ISBN: 0 7803 7761 3 Material Identity Number: XX-2003-02028
U.S. Copyright Clearance Center Code: 0-7803-7761-3/03/$17.00
Conference Title: ISCAS 2003. International Symposium on Circuits and Systems
Conference Sponsor: IEEE Circuits & Syst. Soc; Mahanakorn Univ. Technol
Conference Date: 25-28 May 2003 Conference Location: Bangkok, Thailand
Medium: Also available on CD-ROM in PDF format
Language: English Document Type: Conference Paper (PA)
Treatment: Theoretical (T)
Abstract: Many **watermarking** algorithms embed the **watermark** into the image as contiguous non-overlapping tiles. This tiling structure forms an implicit synchronization template that can be revealed through autocorrelation. This template is composed of a set of weak peaks, replicating the relative position of the **watermark** tiles. Hence, synchronization can be resolved by comparing the actual locations of these peaks to the theoretical ones to determine the scaling factor and the orientation angle of the tiles. Unfortunately, these peaks are very weak and measuring their locations directly is not easy. In this paper, a log-polar mapping of the synchronization template is computed to convert the scaling factor and the rotation angle of the template into vertical and horizontal shifts. These shifts are then detected using a Phase-Only-Matched filter (POM), which concentrates the weak energy from all peaks into a single peak that is much easier to detect. The scaling factor and orientation angle are determined from the location of this peak. Simulation results of this method have shown that this method is very effective and produces accurate results. (6 Refs)
Subfile: B C
Descriptors: correlation theory; filtering theory; image coding; matched filters; synchronisation; **watermarking**
Identifiers: **watermark** re-synchronization; log-polar mapping; image autocorrelation; scaling factor; synchronization template; template rotation angle; vertical shifts; horizontal shifts; phase-only-matched filter; orientation angle
Class Codes: B6135C (Image and video coding); B6140B (Filtering methods in signal processing); C5260B (Computer vision and image processing techniques); C6130S (Data security); C1260S (Signal processing theory)

2/5/6 (Item 6 from file: 2)
DIALOG(R)File 2:INSPEC

7271286 INSPEC Abstract Number: C2002-06-6130M-036
Title: Practical challenges for digital watermarking **applications**
Author(s): **Sharma, R.K.** ; Decker, S.
Author Affiliation: Digimarc Corp., Tualatin, OR, USA
Journal: EURASIP Journal on Applied Signal Processing vol.2002, no.2 p.133-9
Publisher: Hindawi,
Publication Date: Feb. 2002 Country of Publication: USA
CODEN: EJASCT ISSN: 1110-8657
SICI: 1110-8657(200202)2002:2L.133:PCDW;1-V
Material Identity Number: H080-2002-004
Language: English Document Type: Journal Paper (JP)
Treatment: Practical (P)
Abstract: The field of digital **watermarking** has recently seen numerous

articles covering novel techniques, theoretical studies, attacks, and analysis. In this paper, we focus on an emerging application to highlight practical challenges for digital **watermarking** applications. Challenges include design considerations, requirements analysis, choice of **watermarking** techniques, speed, robustness, and the tradeoffs involved. We describe common attributes of **watermarking** systems and discuss the challenges in developing real world applications. Our application uses digital **watermarking** to connect ordinary toys to the digital world. The application captures important aspects of **watermarking** systems and illustrates some of the design issues faced. (7 Refs)

Subfile: C

Descriptors: copy protection; data encapsulation; image coding; microcomputer applications; multimedia computing; security of data; systems analysis

Identifiers: digital **watermarking** ; design considerations; smart toys; connected content; repetition code; requirements analysis; multimedia; **watermarking** techniques; **watermarking** speed; robustness; spread spectrum **watermarking**

Class Codes: C6130M (Multimedia); C6120 (File organisation); C6130S (Data security)

2/5/7 (Item 7 from file: 2)

DIALOG(R)File 2:INSPEC

7189889 INSPEC Abstract Number: C2002-03-6130-048

Title: Practical challenges for digital watermarking **applications**

Author(s): **Sharma, R.K.** ; Decker, S.

Author Affiliation: Digimarc Corp., Tualatin, OR, USA

Conference Title: 2001 IEEE Fourth Workshop on Multimedia Signal Processing (Cat. No.01TH8564) p.237-42

Editor(s): Dugelay, J-L; Rose, K.

Publisher: IEEE, Piscataway, NJ, USA

Publication Date: 2001 Country of Publication: USA xvi+640 pp.

ISBN: 0 7803 7025 2 Material Identity Number: XX-2001-02356

U.S. Copyright Clearance Center Code: 0-7803-7025-2/01/$101.00

Conference Title: 2001 IEEE Fourth Workshop on Multimedia Signal Processing

Conference Sponsor: IEEE Signal Process. Soc

Conference Date: 3-5 Oct. 2001 Conference Location: Cannes, France

Language: English Document Type: Conference Paper (PA)

Treatment: Practical (P)

Abstract: The field of digital **watermarking** has recently seen numerous articles covering novel techniques, theoretical studies, attacks and analysis. We focus on practical challenges for digital **watermarking** applications. Challenges include design considerations, requirements analysis, choice of **watermarking** techniques, speed, robustness and the tradeoffs involved. We describe common attributes of **watermarking** systems and discuss the challenges in developing real world applications. We present, as a case study, a hypothetical application that captures important aspects of **watermarking** systems and illustrates some of the issues faced. (5 Refs)

Subfile: C

Descriptors: copy protection; data encapsulation; security of data

Identifiers: digital **watermarking** applications; design considerations; requirements analysis; speed; robustness; real world applications; security

Class Codes: C6130 (Data handling techniques); C6130S (Data security)

2/5/8 (Item 8 from file: 2)

DIALOG(R)File 2:INSPEC

6790598 INSPEC Abstract Number: C2001-02-6130S-015

Title: Smart Images" using Digimarc's watermarking technology
Author(s): **Alattar, A.M.**
Author Affiliation: Digimarc Corp., Tualatin, OR, USA
Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.3971 p.264-73
Publisher: SPIE-Int. Soc. Opt. Eng,
Publication Date: 2000 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(2000)3971L.264:TIUD;1-5
Material Identity Number: C574-2000-149
U.S. Copyright Clearance Center Code: 0277-786X/2000/$15.00
Conference Title: Security and Watermarking of Multimedia Contents II
Conference Sponsor: SPIE; Soc. Imaging Sci. & Technol
Conference Date: 24-26 Jan. 2000 Conference Location: San Jose, CA, USA
Language: English Document Type: Conference Paper (PA); Journal Paper (JP)
Treatment: Applications (A); Practical (P)
Abstract: This paper introduces the concept of Smart Images and explains the use of **watermarking** technology in their implementation. A Smart Image is a digital or physical image that contains a digital **watermark** , which leads to further information about the image content via the Internet, communicates ownership rights and the procedure for obtaining usage rights, facilitates commerce, or instructs and controls other computer software or hardware. Thus, Smart Images, empowered by digital **watermarking** technology, act as active agents or catalysts which gracefully bridge both traditional and modern electronic commerce. This paper presents the use of Digimarc Corporation's **watermarking** technology to implement Smart Images. The paper presents an application that demonstrates how Smart Images facilitate both traditional and electronic commerce. The paper also analyzes the technological challenges to be faced for ubiquitous use of Smart Images. (12 Refs)
Subfile: C
Descriptors: copy protection; electronic commerce
Identifiers: Smart Images; Digimarc's **watermarking** technology; igital **watermark** ; usage rights; active agents; technological challenges
Class Codes: C6130S (Data security); C7120 (Financial computing)

2/5/9 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

06689563 E.I. No: EIP03477743622
Title: Evaluation of Watermarking **Low Bit-rate MPEG-4 Bit Streams**
Author: **Alattar, Adnan M.** ; Celik, Mehmet U.; Lin, Eugene T.
Corporate Source: Digimarc Corporation, Tualatin, OR 97062, United States
Conference Title: Security and Watermarking of Multimedia Contents V
Conference Location: Santa Clara, CA, United States Conference Date: 20030121-20030124
Sponsor: IS and T; SPIE
E.I. Conference No.: 61509
Source: Proceedings of SPIE - The International Society for Optical Engineering v 5020 2003. p 440-451
Publication Year: 2003
CODEN: PSISDG ISSN: 0277-786X
Language: English
Document Type: CA; (Conference Article) Treatment: T; (Theoretical)
Journal Announcement: 0401W4
Abstract: A novel **watermarking** algorithm for **watermarking** low bit-rate MPEG-4 compressed video is developed and evaluated in this paper. Spatial spread spectrum is used to invisibly embed the **watermark** into the host video. A master synchronization template is also used to combat geometrical distortion such as cropping, scaling, and rotation. The same master synchronization template is used for **watermarking** all video

objects (VOP) in the bit-stream, but each object can be **watermarked** with a unique payload. A gain control algorithm is used to adjust the local gain of the **watermark** , in order to maximize **watermark** robustness and minimize the impact on the quality of the video. A spatial and temporal drift compensator is used to eliminate **watermark** self-interference and the drift in quality due to AC/DC prediction in I-VOPs and motion compensation in P- and B-VOPs, respectively. Finally, a bit-rate controller is used to maintain the data-rate at an acceptable level after embedding the **watermark** . The developed **watermarking** algorithm is tested using several bit-streams at bit-rates ranging from 128-750 Kbit/s. The visibility and the robustness of the **watermark** after decompression, rotation, scaling, sharpening, noise reduction, and trans-coding are evaluated. 16 Refs.

Descriptors: Digital **watermarking** ; Synchronization; Gain control; Control equipment; Noise abatement; Algorithms

Identifiers: Bit streams

Classification Codes:

723.2 (Data Processing); 731.1 (Control Systems); 731.3 (Specific Variables Control); 732.1 (Control Equipment); 751.4 (Acoustic Noise)

723 (Computer Software, Data Handling & Applications); 731 (Automatic Control Principles & Applications); 732 (Control Devices); 751 (Acoustics, Noise & Sound)

72 (COMPUTERS & DATA PROCESSING); 73 (CONTROL ENGINEERING); 75 (SOUND & ACOUSTICAL TECHNOLOGY)

2/5/10 (Item 2 from file: 8)

06665964 E.I. No: EIP03517785355

Title: Reversible watermark **using difference expansion of triplets**

Author: **Alattar, Adnan M.**

Corporate Source: Digimarc Corporation, Tualatin, OR 97062, United States

Conference Title: Proceedings: 2003 International Conference on Image Processing, ICIP-2003

Conference Location: Barcelona, Spain Conference Date: 20030914-20030917

Sponsor: IEEE Signal Processing Society

E.I. Conference No.: 61999

Source: IEEE International Conference on Image Processing v 1 2003. p 501-504 (IEEE cat n 03CH37429)

Publication Year: 2003

CODEN: 85QTAW

Language: English

Document Type: CA; (Conference Article) Treatment: T; (Theoretical)

Journal Announcement: 0401W1

Abstract: A new reversible **watermarking** algorithm based on the difference expansion of colored images has been developed. Since the **watermark** is completely reversible, the original image can be recovered exactly. The algorithm uses spatial and spectral triplets of pixels to hide pairs of bits, which allows the algorithm to hide a large amount of data. A spatial triplet is any three pixel values selected from the same spectral component, while a spectral triplet is any three pixel values selected from different spectral components. The algorithm is recursively applied to the rows and columns of the spectral components of the image and across all spectral components to maximize the hiding capacity. Simulation results show that the hiding capacity of the algorithm is very high and the resulting distortion is low. 9 Refs.

Descriptors: Digital **watermarking** ; Image processing; Mathematical transformations; Vectors; Algorithms; Computer simulation

Identifiers: Steganography; Cross-spectral triplets

Classification Codes:

723.2 (Data Processing); 921.3 (Mathematical Transformations); 921.1 (Algebra); 723.5 (Computer Applications)

723 (Computer Software, Data Handling & Applications); 921 (Applied Mathematics)

72 (COMPUTERS & DATA PROCESSING); 92 (ENGINEERING MATHEMATICS)

2/5/11 (Item 3 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

06565023 E.I. No: EIP03427675318
Title: Digital Watermarking **of Low Bit-Rate Advanced Simple Profile MPEG-4 Compressed Video**
Author: **Alattar, Adnan M.** ; Lin, Eugene T.; Celik, Mehmet Utku
Corporate Source: Digimarc Corporation, Tualatin, OR 97062, United States
Source: IEEE Transactions on Circuits and Systems for Video Technology v 13 n 8 August 2003. p 787-800
Publication Year: 2003
CODEN: ITCTEM ISSN: 1051-8215
Language: English
Document Type: JA; (Journal Article) Treatment: T; (Theoretical); X; (Experimental)
Journal Announcement: 0310W3
Abstract: A novel MPEG-4 compressed domain video **watermarking** method is proposed and its performance is studied at video bit rates ranging from 128 to 768 kb/s. The spatial spread-spectrum **watermark** is embedded directly to compressed MPEG-4 bitstreams by modifying DCT coefficients. A synchronization template combats geometric attacks, such as cropping, scaling, and rotation. The method also features a gain control algorithm that adjusts the embedding strength of the **watermark** depending on local image characteristics, increasing **watermark** robustness or, equivalently, reducing the **watermark**'s impact on visual quality. A drift compensator prevents the accumulation of **watermark** distortion and reduces **watermark** self-interference due to temporal prediction in inter-coded frames and AC/DC prediction in intra-coded frames. A bit-rate controller maintains the bit rate of the **watermarked** video within an acceptable limit. The **watermark** was evaluated and found to be robust against a variety of attacks, including transcoding, scaling, rotation, and noise reduction. 38 Refs.
Descriptors: Digital **watermarking** ; Video signal processing; Image compression; Information theory; Spread spectrum communication; Synchronization; Image quality; Image coding; Cosine transforms; Algorithms
Identifiers: Bit-rate controllers
Classification Codes:
723.2 (Data Processing); 716.4 (Television Systems & Equipment); 716.1 (Information & Communication Theory); 921.3 (Mathematical Transformations)
723 (Computer Software, Data Handling & Applications); 716 (Electronic Equipment, Radar, Radio & Television); 741 (Light, Optics & Optical Devices); 921 (Applied Mathematics)
72 (COMPUTERS & DATA PROCESSING); 71 (ELECTRONICS & COMMUNICATION ENGINEERING); 74 (LIGHT & OPTICAL TECHNOLOGY); 92 (ENGINEERING MATHEMATICS)

2/5/12 (Item 4 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

06537527 E.I. No: EIP03397649228
Title: Watermarking **Low Bit-rate Advanced Simple Profile MPEG-4 Bitstreams**
Author: **Alattar, Adnan M.** ; Lin, Eugene T.; Celik, Mehmet U.
Corporate Source: Digimarc Corporation, Tualatin, OR 97062, United States
Conference Title: 2003 IEEE International Conference on Accoustics, Speech, and Signal Processing
Conference Location: Hong Kong, Hong Kong Conference Date: 20030406-20030410
Sponsor: The Institute of Electrical and Electronics Engineers Signal
E.I. Conference No.: 61466

Source: ICASSP, IEEE International Conference on Acoustics, Speech and Signal Processing - Proceedings v 3 2003. p 513-516 (IEEE cat n 03CH37404)
Publication Year: 2003
CODEN: IPRODJ ISSN: 0736-7791
Language: English
Document Type: CA; (Conference Article) Treatment: T; (Theoretical)
Journal Announcement: 0310W1
Abstract: This paper presents a novel **watermarking** method for low bit-rate video that is compressed according to the Advanced Simple Profile of MPEG-4. A spatial spread spectrum **watermark** was embedded directly to the MPEG-4 bit-streams by adopting Hartung's approach of **watermarking** MPEG-2 compressed bit-streams. A synchronization template was employed to combat cropping, scaling, and rotation. A gain control algorithm adjusts the local strength of the **watermark** depending on local image characteristics, in order to maximize **watermark** robustness and to minimize the impact on the quality of the video. A drift compensator prevents the accumulation of **watermark** distortion and reduces inter-frame interference of **watermark** signals due to motion compensated prediction in inter-coded frames. The developed **watermarking** algorithm was tested at bit-rates ranging from 128-768 Kbit/s. The **watermark** 's impact on visual quality as well as its robustness after decompression, scaling, rotation, sharpening, and noise reduction was evaluated. 8 Refs.
Descriptors: Digital **watermarking** ; Video signal processing; Gain control; Noise abatement; Image quality
Identifiers: Inter-coded frames
Classification Codes:
723.2 (Data Processing); 716.4 (Television Systems & Equipment); 731.3 (Specific Variables Control); 751.4 (Acoustic Noise)
723 (Computer Software, Data Handling & Applications); 716 (Electronic Equipment, Radar, Radio & Television); 731 (Automatic Control Principles & Applications); 751 (Acoustics, Noise & Sound); 741 (Light, Optics & Optical Devices)
72 (COMPUTERS & DATA PROCESSING); 71 (ELECTRONICS & COMMUNICATION ENGINEERING); 73 (CONTROL ENGINEERING); 75 (SOUND & ACOUSTICAL TECHNOLOGY); 74 (LIGHT & OPTICAL TECHNOLOGY)

2/5/13 (Item 5 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

06445034 E.I. No: EIP03297543502
Title: Watermark **re-synchronization using log-polar mapping of image autocorrelation**
Author: **Alattar, Adnan M.** ; Meyer, Joel
Corporate Source: Digimarc Corporation, Tualatin, OR 97062, United States
Conference Title: Proceedings of the 2003 IEEE International Symposium on Circuits and Systems
Conference Location: Bangkok, Thailand Conference Date: 20030525-20030528
Sponsor: IEEE Circuits and Systems Society; Mahanakorn University of Technology
E.I. Conference No.: 61136
Source: Proceedings - IEEE International Symposium on Circuits and Systems v 2 2003. p II928-II931 (IEEE cat n 03CH37430)
Publication Year: 2003
CODEN: PICSDI ISSN: 0271-4310
Language: English
Document Type: CA; (Conference Article) Treatment: T; (Theoretical)
Journal Announcement: 0307W3
Abstract: Many **watermarking** algorithms embed the **watermark** into the image as contiguous non-overlapping tiles. This tiling structure forms an implicit synchronization template that can be revealed through autocorrelation. This template is composed of a set of weak peaks, replicating the relative position of the **watermark** tiles. Hence, synchronization can be resolved by comparing the actual locations of these peaks to the theoretical ones to determine the scaling factor and the

orientation angle of the tiles. Unfortunately, these peaks are very weak and measuring their locations directly is not easy. In this paper, a log-polar mapping of the synchronization template is computed to convert the scaling factor and the rotation angle of the template into vertical and horizontal shifts. These shifts are then detected using a Phase-Only-Matched filter (POM), which concentrates the weak energy from all peaks into a single peak that is much easier to detect. The scaling factor and orientation angle are determined from the location of this peak. Simulation results of this method have shown that this method is very effective and produces accurate results. 6 Refs.

Descriptors: Image processing; **Watermarking** ; Synchronization; Mapping; Computer simulation

Identifiers: Image autocorrelation

Classification Codes:

723.2 (Data Processing); 731.1 (Control Systems); 723.5 (Computer Applications)

723 (Computer Software, Data Handling & Applications); 731 (Automatic Control Principles & Applications)

72 (COMPUTERS & DATA PROCESSING); 73 (CONTROL ENGINEERING)

2/5/14 (Item 6 from file: 8)

DIALOG(R)File 8:Ei Compendex(R)

06358345 E.I. No: EIP03177440499

Title: Practical challenges for digital watermarking **applications**

Author: **Sharma, Ravi K.** ; Decker, Steve

Corporate Source: Digimarc Corporation, Tualatin, OR 97062, United States

Source: Eurasip Journal on Applied Signal Processing v 2002 n 2 February 2002. p 133-139

Publication Year: 2002

CODEN: EJASCT ISSN: 1110-8657

Language: English

Document Type: JA; (Journal Article) Treatment: T; (Theoretical)

Journal Announcement: 0304W4

Abstract: The field of digital **watermarking** has recently seen numerous articles covering novel techniques, theoretical studies, attacks, and analysis. In this paper, we focus on an emerging application to highlight practical challenges for digital **watermarking** applications. Challenges include design considerations, requirements analysis, choice of **watermarking** techniques, speed, robustness, and the tradeoffs involved. We describe common attributes of **watermarking** systems and discuss the challenges in developing real world applications. Our application uses digital **watermarking** to connect ordinary toys to the digital world. The application captures important aspects of **watermarking** systems and illustrates some of the design issues faced. 7 Refs.

Descriptors: Digital **watermarking** ; Spread spectrum communication; Data privacy; Data acquisition; Smart cards; Cameras; Interfaces (computer); Personal computers; Error correction; Security of data

Identifiers: Spread spectrum **watermarking** ; **Watermarking** trade-offs; Repetition code; Smart toys

Classification Codes:

723.2 (Data Processing); 716.3 (Radio Systems & Equipment); 722.4 (Digital Computers & Systems); 742.2 (Photographic Equipment); 722.2 (Computer Peripheral Equipment); 721.1 (Computer Theory (Includes Formal Logic, Automata Theory, Switching Theory & Programming Theory))

723 (Computer Software, Data Handling & Applications); 716 (Electronic Equipment, Radar, Radio & Television); 722 (Computer Hardware); 742 (Cameras & Photography); 721 (Computer Circuits & Logic Elements)

72 (COMPUTERS & DATA PROCESSING); 71 (ELECTRONICS & COMMUNICATION ENGINEERING); 74 (LIGHT & OPTICAL TECHNOLOGY)

2/5/15 (Item 7 from file: 8)

DIALOG(R)File 8:Ei Compendex(R)

06310352 E.I. No: EIP03097380690
Title: Practical challenges for digital watermarking **applications**
Author: **Sharma, Ravi K.** ; Decker, Steve
Corporate Source: Digimarc Corporation, Tualatin, OR 97062, United States
Conference Title: 2001 IEEE fourth Workshop on Multimedia Signal Processing
Conference Location: Cannes, France Conference Date: 20011003-20011005
Sponsor: IEEE Signal Processing Society
E.I. Conference No.: 60444
Source: 2001 IEEE Fourth Workshop on Multimedia Signal Processing 2001.
Publication Year: 2001
ISBN: 0780370252
Language: English
Document Type: CA; (Conference Article) Treatment: A; (Applications); T ; (Theoretical); X; (Experimental)
Journal Announcement: 0303W2
Abstract: The field of digital **watermarking** has recently seen numerous articles covering novel techniques, theoretical studies, attacks and analysis. In this paper, we focus on practical challenges for digital **watermarking** applications. Challenges include design considerations, requirements analysis, choice of **watermarking** techniques, speed, robustness and the tradeoffs involved. We describe common attributes of **watermarking** systems and discuss the challenges in developing real world applications. We present, as a case study, a hypothetical application that captures important aspects of **watermarking** systems and illustrates some of the issues faced. 5 Refs.
Descriptors: Digital **watermarking** ; Real time systems; Copyrights; Security of data; Data acquisition; Internet
Identifiers: Copy prevention
Classification Codes:
723.2 (Data Processing); 722.4 (Digital Computers & Systems); 902.3 (Legal Aspects)
723 (Computer Software, Data Handling & Applications); 722 (Computer Hardware); 902 (Engineering Graphics; Engineering Standards; Patents); 903 (Information Science); 716 (Electronic Equipment, Radar, Radio & Television)
72 (COMPUTERS & DATA PROCESSING); 90 (ENGINEERING, GENERAL); 71 (ELECTRONICS & COMMUNICATION ENGINEERING)

2/5/16 (Item 8 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

06036307 E.I. No: EIP02156915392
Title: Practical challenges for digital watermarking **applications**
Author: **Sharma, Ravi K.** ; Decker, Steve
Corporate Source: Digimarc Corporation, Tualatin, OR 97062, United States
Source: Applied Signal Processing n 2 February 2002. p 133-139
Publication Year: 2002
CODEN: ASPRFL ISSN: 0941-0635
Language: English
Document Type: JA; (Journal Article) Treatment: T; (Theoretical)
Journal Announcement: 0204W3
Abstract: The field of digital **watermarking** has recently seen numerous articles covering novel techniques, theoretical studies, attacks, and analysis. In this paper, we focus on an emerging application to highlight practical challenges for digital **watermarking** applications. Challenges include design considerations, requirements analysis, choice of **watermarking** techniques, speed, robustness, and the tradeoffs involved. We describe common attributes of **watermarking** systems and discuss the challenges in developing real world applications. Our application uses digital **watermarking** to connect ordinary toys to the digital world. The application captures important aspects of **watermarking** systems and illustrates some of the design issues faced. 7 Refs.
Descriptors: Digital **watermarking** ; Object recognition; Multimedia

systems; Security of data; Personal computers; Video cameras; Computer software; Error correction
Identifiers: Spread spectrum **watermarking** ; **Watermarking** tradeoffs; Repetition code; Smart toys; Connected content
Classification Codes:
723.2 (Data Processing); 723.5 (Computer Applications); 722.4 (Digital Computers & Systems); 716.4 (Television Systems & Equipment); 723.1 (Computer Programming)
723 (Computer Software, Data Handling & Applications); 722 (Computer Hardware); 716 (Electronic Equipment, Radar, Radio & Television)
72 (COMPUTERS & DATA PROCESSING); 71 (ELECTRONICS & COMMUNICATION ENGINEERING)

2/5/17 (Item 9 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

05598108 E.I. No: EIP00075229959
Title: Smart Images' using Digimarc's watermarking **technology**
Author: **Alattar, Adnan M.**
Corporate Source: Digimarc Corp, Tualatin, OR, USA
Conference Title: Security and Watermarking of Multimedia Contents II
Conference Location: San Jose, CA, USA Conference Date: 19000124-19000126
Sponsor: Is and T; SPIE
E.I. Conference No.: 56981
Source: Proceedings of SPIE - The International Society for Optical Engineering v 3971 2000. SPIE, Bellingham, WA, USA. p 264-273
Publication Year: 2000
CODEN: PSISDG ISSN: 0277-786X
Language: English
Document Type: CA; (Conference Article) Treatment: G; (General Review)
Journal Announcement: 0008W3
Abstract: This paper introduces the concept of Smart Images and explains the use of **watermarking** technology in their implementation. A Smart Image is a digital or physical image that contains a digital **watermark** , which leads to further information about the image content via the Internet, communicates ownership rights and the procedure for obtaining usage rights, facilitates commerce, or instructs and controls other computer software or hardware. Thus, Smart Images, empowered by digital **watermarking** technology, act as active agents or catalysts which gracefully bridge both traditional and modern electronic commerce. This paper presents the use of Digimarc Corporation's **watermarking** technology to implement Smart Images. The paper presents an application that demonstrates how Smart Images facilitate both traditional and electronic commerce. The paper also analyzes the technological challenges to be faced for ubiquitous use of Smart Images. (Author abstract) 12 Refs.
Descriptors: *Multimedia systems; Security of data; Digital signal processing; Internet; Computer architecture; Electronic commerce
Identifiers: Digital **watermarking** ; Steganography
Classification Codes:
723.5 (Computer Applications); 723.2 (Data Processing)
723 (Computer Software)
72 (COMPUTERS & DATA PROCESSING)

2/5/18 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

11995429 Genuine Article#: 718PA Number of References: 38
Title: Digital watermarking **of low bit-rate advanced simple profile MPEG-4 compressed video**
Author(s): **Alattar AM (REPRINT)** ; Lin ET; Celik MU
Corporate Source: Digimarc Corp,Tualatin//OR/97062 (REPRINT); Digimarc Corp,Tualatin//OR/97062; Purdue Univ,Sch Elect & Comp Engn,W

Lafayette//IN/47907; Univ Rochester,Dept Elect & Comp Engn,Rochester//NY/14627
Journal: IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS FOR VIDEO TECHNOLOGY, 2003, V13, N8 (AUG), P787-800
ISSN: 1051-8215 Publication date: 20030800
Publisher: IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC, 445 HOES LANE, PISCATAWAY, NJ 08855 USA
Language: English Document Type: ARTICLE
Geographic Location: USA
Journal Subject Category: ENGINEERING, ELECTRICAL & ELECTRONIC
Abstract: A novel MPEG-4 compressed domain video **watermarking** method is proposed and its performance is studied at video bit rates ranging from 128 to 768 kb/s. The spatial spread-spectrum **watermark** is embedded directly to compressed MPEG-4 bitstreams by modifying DCT coefficients. A synchronization template combats geometric attacks, such as cropping, scaling, and rotation. The method also features a gain control algorithm that adjusts the embedding strength of the **watermark** depending on local image characteristics, increasing **watermark** robustness or, equivalently, reducing the **watermark** 's impact on visual quality. A drift compensator prevents the accumulation of **watermark** distortion and reduces **watermark** self-interference due to temporal prediction in inter-coded frames and AC/DC prediction in intra-coded frames. A bit-rate controller maintains the bit rate of the **watermarked** video within an acceptable limit. The **watermark** was evaluated and found to be robust against a variety of attacks, including transcoding, scaling, rotation, and noise reduction.
Descriptors--Author Keywords: MPEG-4 ; spread spectrum ; synchronization template ; video **watermarking**
Identifiers--KeyWord Plus(R): DIFFERENTIAL ENERGY **WATERMARKING** ; SPATIOTEMPORAL MODEL; HUMAN VISION; MULTIMEDIA; SYSTEM; ATTACK; IMAGES
Cited References:
*ISO IEC, 1994, 138182 ISOIEC INT OR
*ISO IEC, 1993, 11172 ISOIEC INT ORG
*ISO IEC, 1998, 144962 ISOIEC INT OR
ARENA S, 2000, P IEEE INT C IM PROC
BARNI M, 2000, V3971, P465, P SOC PHOTO-OPT INS
BAS P, 2002, V11, P1014, IEEE T IMAGE PROCESS
BASSO A, 1996, P263, P PCS 96 AUSTR MAR
COX IJ, 1997, V6, P1673, IEEE T IMAGE PROCESS
COX I, 2002, DIGITAL WATERMARKING
DELANNAY D, 2000, V3, P77, P IEEE INT C IM PROC
EISERT P, 1998, V18, P70, IEEE COMPUT GRAPH
HARTUNG F, 1999, V87, P1079, P IEEE
HARTUNG F, 1998, V66, P283, SIGNAL PROCESS
HARTUNG F, 2000, THESIS U ERLANGEN
HAYKIN S, COMMUNICATION SYSTEM
HERRIGEL A, 2001, V4314, P394, P SOC PHOTO-OPT INS
KALKER T, 1999, V3657, P103, P SOC PHOTO-OPT INS
KALKER T, 1999, V3657, P103, P SOC PHOTO-OPT INS
LAMBRECHT CJV, 1996, V2668, P450, P SOC PHOTO-OPT INS
LANGELAAR GC, 2000, V17, P20, IEEE SIGNAL PROC MAG
LANGELAAR GC, 2001, V10, P148, IEEE T IMAGE PROCESS
LIN ET, 2002, V4675, P478, P SOC PHOTO-OPT INS
LIN ET, 2001, V4314, P116, P SOC PHOTO-OPT INS
LIN CY, 2001, V10, P767, IEEE T IMAGE PROCESS
MORAJIMENEZ I, 2000, P IEEE INT C IM PROC
NICHOLSON D, 1999, P472, EUR C MULT APPL SERV
ORUANAIDH JJK, 1997, V1, P536, P IEEE INT C IM PROC
ORUANAIDH J, 1999, P IEEE C COMP VIS PA
PEREIRA S, 1999, V1, P870, P ICMCS 99
PIVA A, 2000, V3, P5, P IEEE INT C IM PROC
SETYAWAN I, 2001, V4314, P73, P SOC PHOTO-OPT INS
SULLIVAN GJ, 1998, V15, P74, IEEE SIGNAL PROC MAG
SWANSON MD, 1998, V86, P1064, P IEEE
VOLOSHYNOVSKIY S, 2001, V81, P1177, SIGNAL PROCESS
WANG Z, 2002, V9, P81, IEEE SIGNAL PROC LET
WATSON AB, 2001, V10, P20, J ELECTRON IMAGING

WEBSTER A, 1993, P15, P HUM VIS VIS PROC D
WESTEN SJP, 1997, V3016, P260, P SOC PHOTO-OPT INS

2/5/19 (Item 2 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

10830127 Genuine Article#: 574LZ Number of References: 7
Title: Practical challenges for digital watermarking **applications**
Author(s): **Sharma RK (REPRINT)** ; Decker S
Corporate Source: Digimarc Corp,19801 SW 72nd Ave Suite 100/Tualatin//OR/97062 (REPRINT); Digimarc Corp,Tualatin//OR/97062
Journal: EURASIP JOURNAL ON APPLIED SIGNAL PROCESSING, 2002, V2002, N2 (FEB), P133-139
ISSN: 1110-8657 Publication date: 20020200
Publisher: HINDAWI PUBLISHING CORPORATION, PO BOX 3079, CAYAHOGA FALLS, OH 44233 USA
Language: English Document Type: ARTICLE
Geographic Location: USA
Journal Subject Category: ENGINEERING, ELECTRICAL & ELECTRONIC
Abstract: The field of digital **watermarking** has recently seen numerous articles covering novel techniques, theoretical studies, attacks, and analysis. In this paper, we focus on an emerging application to highlight practical challenges for digital **watermarking** applications. Challenges include design considerations, requirements analysis, choice of **watermarking** techniques, speed, robustness, arid the tradeoffs involved. We describe common attributes of **watermarking** systems arid discuss the challenges in developing real world applications. Our application uses digital **watermarking** to connect ordinary toys to the digital world. The application captures important aspects of **watermarking** systems and illustrates some of the design issues faced.
Descriptors--Author Keywords: digital **watermarking** ; spread spectrum **watermarking** ; challenges for **watermarking** ; **watermarking** tradeoffs ; repetition code ; smart toys ; connected content
Identifiers--KeyWord Plus(R): IMAGES
Cited References:
ALATTAR AM, 2000, V3971, P264, P SOC PHOTO-OPT INS
COX IJ, 2001, DIGITAL WATERMARKING
DECKER S, 2001, V39, P128, IEEE COMMUN MAG
HANNIGAN BT, 2001, V4314, P468, P SOC PHOTO-OPT INS
PERRY B, 2000, V3973, P80, P SOC PHOTO-OPT INS
PETITCOALS FAP, 1998, P218, 2 WORKSH INF HID
WOLFGANG RB, 1999, V87, P1108, P IEEE

2/5/20 (Item 1 from file: 65)
DIALOG(R)File 65:Inside Conferences

04829892 INSIDE CONFERENCE ITEM ID: CN050385887
Reversible Watermark **Using Difference Expansion of Triplets**
Alattar, A. M.
CONFERENCE: Image processing-International conference
INTERNATIONAL CONFERENCE ON IMAGE PROCESSING, 2003; VOL 1 P: I -501-I-504
IEEE, 2003
ISSN: 1522-4880 ISBN: 0780377508
LANGUAGE: English DOCUMENT TYPE: Conference Papers
CONFERENCE SPONSOR: IEEE
CONFERENCE LOCATION: Barcelona, Spain 2003; Sep (200309) (200309)

BRITISH LIBRARY ITEM LOCATION: 4538.826075
NOTE:
Also known as ICIP 2003. IEEE cat no 03CH37429
DESCRIPTORS: image processing; ICIP; IEEE; signal processing

2/5/21 (Item 2 from file: 65)
DIALOG(R)File 65:Inside Conferences

04719814 INSIDE CONFERENCE ITEM ID: CN049285103
IMSP-P8.1: WATERMARKING LOW BIT-RATE ADVANCED SIMPLE PROFILE MPEG -4 BITSTREAMS
Alattar, A. ; Lin, E.; Celik, M.
CONFERENCE: Vol 3; Image & multidimensional signal processing International conference on acoustics, speech, and signal processing-28th
IEEE INTERNATIONAL CONFERENCE ON ACOUSTICS, SPEECH AND SIGNAL PROCESSING , 2003 P: III -513-516
IEEE, 2003
ISSN: 1520-6149 ISBN: 0780376633
LANGUAGE: English DOCUMENT TYPE: Conference Papers
CONFERENCE SPONSOR: IEEE
CONFERENCE LOCATION: Hong Kong, China 2003; Apr (200304) (200304)

BRITISH LIBRARY ITEM LOCATION: 4362.943000
NOTE:
Also known as ICASSP 2003. IEEE cat no 03CH37404
DESCRIPTORS: ICASSP; acoustics; signal processing; speech processing; industry technology; electro acoustics; electroacoustics; multimedia signal processing; sensor array; multichannel processing; neural networks

2/5/22 (Item 3 from file: 65)
DIALOG(R)File 65:Inside Conferences

04675757 INSIDE CONFERENCE ITEM ID: CN048844534
Evaluation of watermarking **low-bit-rate MPEG-4 bit streams (5020-45)**
Alattar, A. M. ; Celik, M. U.; Lin, E. T.
CONFERENCE: Security and watermarking of multimedia contents-Conference; 5th
PROCEEDINGS-SPIE THE INTERNATIONAL SOCIETY FOR OPTICAL ENGINEERING, 2003 ; VOL 5020 P: 440-451
SPIE, 2003
ISSN: 0277-786X ISBN: 0819448206
LANGUAGE: English DOCUMENT TYPE: Conference Papers
CONFERENCE EDITOR(S): Delp, E. J.; Wong, P. W.
CONFERENCE SPONSOR: Society for Imaging Science and Technology International Society for Optical Engineering
CONFERENCE LOCATION: Santa Clara, CA 2003; Jan (200301) (200301)

BRITISH LIBRARY ITEM LOCATION: 6823.100000
DESCRIPTORS: **watermarking** ; multimedia contents; security; SPIE

2/5/23 (Item 4 from file: 65)
DIALOG(R)File 65:Inside Conferences

04645880 INSIDE CONFERENCE ITEM ID: CN048545762
WATERMARK **RE-SYNCHRONIZATION USING LOG-POLAR MAPPING OF IMAGE AUTOCORRELATION**
Alattar, A. ; Meyer, J.
CONFERENCE: Circuits and systems-International symposium
IEEE INTERNATIONAL SYMPOSIUM ON CIRCUITS AND SYSTEMS, 2003; PART 2 P: II-928-II-931
IEEE, 2003
ISBN: 0780377613
LANGUAGE: English DOCUMENT TYPE: Conference Papers and programme
CONFERENCE SPONSOR: IEEE

CONFERENCE LOCATION: Bangkok 2003; May (200305) (200305)

BRITISH LIBRARY ITEM LOCATION: 4362.967500
NOTE:
IEEE cat no 03CH37430
DESCRIPTORS: ISCAS; IEEE; circuits

2/5/24 (Item 5 from file: 65)
DIALOG(R)File 65:Inside Conferences

04002093 INSIDE CONFERENCE ITEM ID: CN042026141
Practical Challenges for Digital Watermarking **Applications**
Sharma, R. K. ; Decker, S.
CONFERENCE: Multimedia signal processing-Workshop; 4th
IEEE WORKSHOP ON MULTIMEDIA SIGNAL PROCESSING, 2001; 4TH P: 237-244
IEEE, 2001
ISBN: 0780370252
LANGUAGE: English DOCUMENT TYPE: Conference Papers
CONFERENCE EDITOR(S): Rose, K.; Dugelay, J.-L.
CONFERENCE SPONSOR: IEEE Signal Processing Society
CONFERENCE LOCATION: Cannes, France 2001; Oct (200110) (200110)

BRITISH LIBRARY ITEM LOCATION: 4363.240185
NOTE:
IEEE cat no 01TH8564
DESCRIPTORS: multimedia signal processing; IEEE

2/5/25 (Item 6 from file: 65)
DIALOG(R)File 65:Inside Conferences

03361161 INSIDE CONFERENCE ITEM ID: CN035506690
Smart Images using Digimarc's watermarking **technology (3971-25)**
Alattar, A. M.
CONFERENCE: Security and watermarking of multimedia contents-Conference; 2nd
PROCEEDINGS-SPIE THE INTERNATIONAL SOCIETY FOR OPTICAL ENGINEERING, 2000 ; VOL 3971 P: 264-273
SPIE, 2000
ISSN: 0277-786X ISBN: 0819435899
LANGUAGE: English DOCUMENT TYPE: Conference Papers
CONFERENCE EDITOR(S): Wong, P. W.; Delp, E. J.
CONFERENCE SPONSOR: SPIE
CONFERENCE LOCATION: San Jose, CA
CONFERENCE DATE: Jan 2000

BRITISH LIBRARY ITEM LOCATION: 6823.100000
DESCRIPTORS: security; **watermarking** ; multimedia contents; SPIE

2/5/26 (Item 1 from file: 95)
DIALOG(R)File 95:TEME-Technology & Management

01627251 20020400999
Practical challenges for digital watermarking **applications**
Sharma, RK ; Decker, S
Digimarc Corp., Tualatin, USA
EURASIP Journal on Applied Signal Processing, v29, n2, pp133-139, 2002
Document type: journal article Language: English
Record type: Abstract
ISSN: 1110-8657

ABSTRACT:

The field of digital **watermarking** has recently seen numerous articles covering novel techniques, theoretical studies, attacks, and analysis. In this paper, it is focused an emerging application to highlight practical challenges for digital **watermarking** applications. Challenges include design considerations, requirements analysis, choice of **watermarking** techniques, speed, robustness, and the tradeoffs involved. It is described common attributes of **watermarking** systems and discuss the challenges in developing real world applications. This application uses digital **watermarking** to connect ordinary toys to the digital world. The application captures important aspects of **watermarking** systems and illustrates some of the design issues faced.

DESCRIPTORS: SPREAD SPECTRUM; CODING; COPYRIGHT; DATA PRIVACY PROTECTION; DIGITAL DATA PROCESSING; IMPLEMENTATION
IDENTIFIERS: DIGITALES WASSERZEICHEN; SMART TOY ANWENDUNG; digitales Wasserzeichen; Spread Spektrum; Smart Toy

2/5/27 (Item 1 from file: 99)
DIALOG(R)File 99:Wilson Appl. Sci & Tech Abs

2678946 H.W. WILSON RECORD NUMBER: BAST03166748
Digital Watermarking **of Low Bit-Rate Advanced Simple Profile MPEG-4 Compressed Video**
Alattar, Adnan M ; Lin, Eugene T; Celik, Mehmet Utku
IEEE Transactions on Circuits and Systems for Video Technology v. 13 no8 (Aug. 2003) p. 787-800
DOCUMENT TYPE: Feature Article ISSN: 1051-8215 LANGUAGE: English
RECORD STATUS: Corrected or revised record

ABSTRACT: Part of a special issue on authentication, copyright protection, and information hiding. The authors propose a novel MPEG-4 compressed domain video **watermarking** method and evaluate its performance at video bit rates ranging from 128 to 768 kb/s. DCT coefficients are modified in order to directly embed the spatial spread-spectrum **watermark** to compressed MPEG-4 bitstreams. Geometric attacks are overcome by employing a synchronization template. The technique also features a gain control algorithm that modifies the embedding strength of the **watermark** depending on local image characteristics. A drift compensator prevents the accumulation of **watermark** distortion and decreases **watermark** self-interference. The bit rate of the **watermarked** video is maintained within an acceptable limit via a bit-rate controller.
DESCRIPTORS: Digital **watermarks** ; Spread spectrum transmission; Video coding; MPEG standards;

2/5/28 (Item 1 from file: 144)
DIALOG(R)File 144:Pascal

16351743 PASCAL No.: 03-0517976
Evaluation of watermarking **low bit-rate MPEG-4 bit streams**
Security and watermarking **of multimedia contents V : Santa Clara CA, 21-24 January 2003**
ALATTAR Adnan M ; CELIK Mehmet U; LIN Eugene T
DELP Edward J, ed; PING WAH WONG, ed
Digimarc Corporation, Tualatin, OR 97062, United States; University of Rochester, Rochester, NY 14627-0126, United States; Purdue University, West Lafayette, IN 47907, United States
International Society for Optical Engineering, Bellingham WA, United States
Security and watermarking of multimedia contents. Conference, 5 (Santa Clara CA USA) 2003-01-21
Journal: SPIE proceedings series, 2003, 5020 440-451
ISBN: 0-8194-4820-6 ISSN: 1017-2653 Availability: INIST-21760; 354000117710380440

No. of Refs.: 16 ref.
Document Type: P (Serial); C (Conference Proceedings) ; A (Analytic)
Country of Publication: United States
Language: English

A novel **watermarking** algorithm for **watermarking** low bit-rate MPEG-4 compressed video is developed and evaluated in this paper. Spatial spread spectrum is used to invisibly embed the **watermark** into the host video. A master synchronization template is also used to combat geometrical distortion such as cropping, scaling, and rotation. The same master synchronization template is used for **watermarking** all video objects (VOP) in the bit-stream, but each object can be **watermarked** with a unique payload. A gain control algorithm is used to adjust the local gain of the **watermark** , in order to maximize **watermark** robustness and minimize the impact on the quality of the video. A spatial and temporal drift compensator is used to eliminate **watermark** self-interference and the drift in quality due to AC/DC prediction in I-VOPs and motion compensation in P- and B-VOPs, respectively. Finally, a bit-rate controller is used to maintain the data-rate at an acceptable level after embedding the **watermark** . The developed **watermarking** algorithm is tested using several bit-streams at bit-rates ranging from 128-750 Kbit/s. The visibility and the robustness of the **watermark** after decompression, rotation, scaling, sharpening, noise reduction, and trans-coding are evaluated.

English Descriptors: Video production; **Watermarking** ; Synchronization; Spread spectrum; Masking; Image compression; Signal compression; Moving picture expert group
French Descriptors: Production video; Filigranage; Synchronisation; Spectre etale; Masquage; Compression image; Compression signal; MPEG 4; MPEG

Classification Codes: 001D04A05C

2/5/29 (Item 2 from file: 144)
DIALOG(R)File 144:Pascal

16337629 PASCAL No.: 03-0503206
Digital watermarking **of low bit-rate advanced simple profile MPEG-4 compressed video**
Special Issue on Authentication, Copyright Protection, and Information Hiding
ALATTAR Adnan M ; LIN Eugene T; CELIK Mehmet Utku
IZQUIERDO Ebroul, ed; KIM Hyoung Joong, ed; MACQ Benoit, ed
Digimarc Corporation, Tualatin, OR 97062, United States; School of Computer and Electrical Engineering, Purdue University, West Lafayette, IN 47907, United States; Electrical and Computer Engineering Department, University of Rochester, Rochester, NY 14627, United States
Department of Electronic Engineering, Queen Mary University of London, London, E1 4NS, United Kingdom; Department of Control and Instrumentation Engineering, Kangwon National University, Chunchon, 200-701, Korea, Republic of; Telecommunication Laboratory, Universite Catholique de Louvain , Louvain-la-Neuve, Belgium
Journal: IEEE transactions on circuits and systems for video technology, 2003, 13 (8) 787-800
ISSN: 1051-8215 Availability: INIST-22423; 354000112797350060
No. of Refs.: 38 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: United States
Language: English

A novel MPEG-4 compressed domain video **watermarking** method is proposed and its performance is studied at video bit rates ranging from 128 to 768 kb/s. The spatial spread-spectrum **watermark** is embedded directly to compressed MPEG-4 bitstreams by modifying DCT coefficients. A synchronization template combats geometric attacks, such as cropping,

scaling, and rotation. The method also features a gain control algorithm that adjusts the embedding strength of the **watermark** depending on local image characteristics, increasing **watermark** robustness or, equivalently, reducing the **watermark** 's impact on visual quality. A drift compensator prevents the accumulation of **watermark** distortion and reduces **watermark** self-interference due to temporal prediction in inter-coded frames and AC/DC prediction in intra-coded frames. A bit-rate controller maintains the bit rate of the **watermarked** video within an acceptable limit. The **watermark** was evaluated and found to be robust against a variety of attacks, including transcoding, scaling, rotation, and noise reduction.

English Descriptors: Video signal processing; Image processing; Image compression; Digital **watermarking** ; Variable bit rate; Spread spectrum; Robustness
French Descriptors: Traitement signal video; Traitement image; Compression image; Filigranage numerique; Debit binaire variable; Spectre etale; Robustesse

Classification Codes: 001D04A05C

2/5/30 (Item 3 from file: 144)
DIALOG(R)File 144:Pascal

14752877 PASCAL No.: 00-0430644
Smart Images" using Digimarc's watermarking **technology**
Security and watermarking **of multimedia contents II : San Jose CA, 24-26 January 2000**
ALATTAR A M
PING WAH WONG, ed; DELP Edward J, ed
Digimarc Corporation, 19801 SW 72nd Ave., Ste. 250, Tualatin, OR 97062, United States
International Society for Optical Engineering, Bellingham WA, United States
Security and watermarking of multimedia contents. Conference, 2 (San Jose CA USA) 2000-01-24
Journal: SPIE proceedings series, 2000, 3971 264-273
ISBN: 0-8194-3589-9 ISSN: 1017-2653 Availability: INIST-21760; 354000090086170240
No. of Refs.: 12 ref.
Document Type: P (Serial); C (Conference Proceedings) ; A (Analytic)
Country of Publication: United States
Language: English
This paper introduces the concept of Smart Images and explains the use of **watermarking** technology in their implementation. A Smart Image is a digital or physical image that contains a digital **watermark** , which leads to further information about the image content via the Internet, communicates ownership rights and the procedure for obtaining usage rights, facilitates commerce, or instructs and controls other computer software or hardware. Thus, Smart Images, empowered by digital **watermarking** technology, act as active agents or catalysts which gracefully bridge both traditional and modern electronic commerce. This paper presents the use of Digimarc Corporation's **watermarking** technology to implement Smart Images. The paper presents an application that demonstrates how Smart Images facilitate both traditional and electronic commerce. The paper also analyzes the technological challenges to be faced for ubiquitous use of Smart Images.

English Descriptors: Computer hardware; Electronics; Intelligent system; Digital image; Catalyst; Software; Computer control; Internet; Electronic trade; Steganography; **Watermark**

French Descriptors: Materiel(informatique); Electronique; Systeme

intelligent; Image numerique; Catalyseur; Logiciel; Pilotage ordinateur; Internet; Commerce electronique; Digital **watermarking** ; Digimarc; Image intelligente; MediaBridge; Steganographie; Filigrane

Classification Codes: 001D02C03; 001D04B03

```
Set     Items   Description
S1       4565   (DIGITAL OR ELECTRONIC)(2W)(WATERMARK? OR WATER()MARK?) OR
            WATERMARK? OR WATER()MARK? OR TRANSLUCENT()DESIGN?
S2    4127304   CHARACTERISTIC? OR FEATURE? OR TRAIT? OR DESCRIPTION? OR A-
            UTHORIT? OR ATTRIBUT?
S3    2842272   FILTER? OR LOOKUP OR LOOK()UP OR SEARCH? OR SEEK? OR QUER?
            OR MATCH? OR QUEST? OR PURSU? OR FIND? OR RETRIEV? OR EXTRACT?
             OR SEPARATE? OR DIFFERENTIAT? OR SCREEN? OR PREFILTER? OR PR-
            E()FILTER?
S4     329999   NOISE OR SIGNAL() (DIGITAL? OR ELECTRONIC? OR ELECTRICAL OR
             MAGNETIC)(2N)(SIGNAL? OR FREQUENCY OR WAVE? OR PULSE? OR WAV-
            EFORM?)
S5    2833407   DETECT? OR DETERMIN? OR DECID? OR RESOLV? OR ASCERTAIN? OR
            RECOGNI?
S6        789   S1 (2N) S5
S7         20   S1 AND S2 AND S3 AND S4
S8        236   S6 AND S3
S9         10   S8 AND S4
S10        23   S7 OR S9
File 347:JAPIO Nov 1976-2004/Apr(Updated 040802)
         (c) 2004 JPO & JAPIO
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200451
         (c) 2004  Thomson Derwent
```

10/5/1 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO

07725240 **Image available**
APPARATUS AND METHOD FOR PROCESSING ELECTRONIC WATERMARK AND ELECTRONIC WATERMARK PROCESSING PROGRAM

PUB. NO.: 2003-219141 [JP 2003219141 A]
PUBLISHED: July 31, 2003 (20030731)
INVENTOR(s): TANAKA KIYOSHI
APPLICANT(s): TANAKA KIYOSHI
APPL. NO.: 2002-011382 [JP 200211382]
FILED: January 21, 2002 (20020121)
INTL CLASS: H04N-001/387; G06T-001/00; H04N-007/08; H04N-007/081

ABSTRACT

PROBLEM TO BE SOLVED: To provide an apparatus for processing an electronic watermark in which a resistance to addition of a **noise** or cutting out is improved.

SOLUTION: The apparatus for processing the electronic watermark comprises a means for dividing data into blocks, a means for converting block data into one-dimensional data, a means for embedding watermark data in the one-dimensional data, a means for returning the one-dimensional data into the original block, and a means for combining the blocks to restore to the original image data. Further, the apparatus also comprises a means for **searching** the position of the block, and a means for **detecting** the **watermark** data from the one-dimensional data. According to the apparatus, if the cut-out data includes one or more blocks, the watermark data can be detected. A decision by majority of the **watermark** data **detected** from the plurality of the blocks can be adopted, the resistance to the **noise** is improved, and a detecting accuracy is improved.

10/5/2 (Item 2 from file: 347)
DIALOG(R)File 347:JAPIO

07081674 **Image available**
METHOD AND DEVICE FOR EMBEDDING ELECTRONIC WATERMARK, METHOD AND DEVICE FOR **DETECTING ELECTRONIC WATERMARK** AND SOFTWARE STORAGE MEDIUM

PUB. NO.: 2001-309321 [JP 2001309321 A]
PUBLISHED: November 02, 2001 (20011102)
INVENTOR(s): HIRAI JUN
APPLICANT(s): SONY CORP
APPL. NO.: 2000-120540 [JP 2000120540]
FILED: April 21, 2000 (20000421)
INTL CLASS: H04N-007/08; H04N-007/081; G06T-001/00; G09C-005/00

ABSTRACT

PROBLEM TO BE SOLVED: To embed an electronic watermark in an unperceivable range and to also **detect** the **electronic watermark** without mistake by adaptively controlling embedded data quantity.

SOLUTION: An electronic watermark embedding device side avoids image quality disturbance with respect to information that can be grasped by a detector side, e.g. by adaptively adjusting embedment quantity. For instance, the embedment quantity is increased in the vicinity of 100 IRE where **noise** is inconspicuous on the **screen** of a television receiver. On the contrary, the embedment quantity is decreased in the vicinity to 30 IRE where **noise** becomes conspicuous. The **electronic watermark detector** side grasps the state of a vide signal and suppresses the occurrence of erroneous detection by dynamically adjusting a detection threshold in

accordance with the state.

10/5/3 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

016365926 **Image available**
WPI Acc No: 2004-523833/200450
Apparatus and method for inserting and detecting watermark **at spectrum area**
Patent Assignee: ELECTRONICS & TELECOM RES INST (ELTE-N)
Inventor: HONG J U; JUNG S R; SUK J W
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
KR 2003096987	A	20031231	KR 200234102	A	20020618	200450	B

Priority Applications (No Type Date): KR 200234102 A 20020618
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
KR 2003096987	A		1	H04N-007/167	

Abstract (Basic): KR 2003096987 A
NOVELTY - An original data converter(501) converts the original data into a spectrum area to which a watermark is inserted. A watermark converter(504) converts the watermark data into pseudo **noise** (PN) sequence spectrum to be inserted into a spectrum of the original data. A spectrum **filtering** element(502) **filters** the converted PN sequence spectrum according to variables of the original data and band-limited constant. An adder adds PN sequence spectrum **filtered** by the spectrum **filtering** element and the spectrum of the converted original data. A post-processor converts the added data into an output type for outputting the watermarked data.
USE - An apparatus and method for inserting and **detecting** a **watermark** at a spectrum area are provided to protect copyright of digital audio and insert a watermark.
ADVANTAGE - Does not deteriorate the quality of audio.
pp; 1 DwgNo 1/10
Title Terms: APPARATUS; METHOD; INSERT; DETECT; WATERMARK; SPECTRUM; AREA
Derwent Class: W04
International Patent Class (Main): H04N-007/167
File Segment: EPI

10/5/4 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

016250303 **Image available**
WPI Acc No: 2004-408196/200438
Method for inserting and extracting digital watermarks **for digital video authentication**
Patent Assignee: MARKANY INC (MARK-N); MARKTEK INC (MARK-N)
Inventor: CHAE J J; CHOI J U; CHOI Y H; SHIN D H
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
KR 2004012272	A	20040211	KR 200245775	A	20020802	200438	B

Priority Applications (No Type Date): KR 200245775 A 20020802
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
KR 2004012272	A		1	H04N-007/167	

Abstract (Basic): KR 2004012272 A

NOVELTY - A method for inserting and **extracting digital watermarks** for digital video authentication is provided to realize **digital watermarks** robust against transfer of an image or cropping.

DETAILED **DESCRIPTION** - An inputted image is converted into a predetermined format(S10). A template formed of pseudo **noise** sequence is inserted into the converted image(S20). The inputted image is divided by detection blocks, and the detection blocks are divided into a **feature** value block representing **features** of the inputted image, and a **watermarking** block to which **watermarks** are inserted(S30). The **feature** values representing the **features** of the inputted image are **extracted** from the detection blocks representing the **feature** value block(S40). The **feature** values are inserted into the **watermarking** block as **watermarks** (S50).

pp; 1 DwgNo 1/10

Title Terms: METHOD; INSERT; **EXTRACT** ; DIGITAL; **WATERMARK** ; DIGITAL; VIDEO; AUTHENTICITY

Derwent Class: W02

International Patent Class (Main): H04N-007/167

File Segment: EPI

10/5/5 (Item 3 from file: 350)

DIALOG(R)File 350:Derwent WPIX

016021337 **Image available**

WPI Acc No: 2004-179188/200417

XRPX Acc No: N04-142488

Cartoon drawing digital watermarking **method, involves analyzing digitized image blocks to** find **whether they are replaceable with coded blocks indicative of** watermark **code for substituting coded blocks to blocks which may be coded**

Patent Assignee: YU H H (YUHH-I)

Inventor: YU H H

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20040013284	A1	20040122	US 2002195233	A	20020716	200417	B

Priority Applications (No Type Date): US 2002195233 A 20020716

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20040013284	A1		18	G06K-009/00	

Abstract (Basic): US 20040013284 A1

NOVELTY - The method involves stepping through multi-pixel blocks of a digitized image having regions of different densities. The multi-pixel blocks are analyzed to determine if they are replaceable with coded blocks indicative of a **watermark** code, the replaceable blocks being blocks which may be coded. The coded blocks indicative of a **watermark** are substituted to blocks of the digitized image which may be coded.

USE - Used for **digital watermarking** of an image e.g. cartoon drawing utilizing a computer.

ADVANTAGE - The **watermarks** applied do not produce perceptible degradation of images consisting of simple compositions of smooth regions, thus it is practical to provide **watermark** protection to many types of low texture images. The **watermarks** are inserted imperceptibly in a manner that is resistant to scaling, random **noise** , and copying by coding a low texture image into a series of binary values 0 and 1.

DESCRIPTION OF DRAWING(S) - The drawing shows a flow chart of a method of digitally embedding a **watermark** in a low texture halftone image.

pp; 18 DwgNo 1A/9

Title Terms: CARTOON; DRAW; DIGITAL; **WATERMARK** ; METHOD; DIGITAL; IMAGE;

BLOCK; **FINDER** ; REPLACE; CODE; BLOCK; INDICATE; **WATERMARK** ; CODE; SUBSTITUTE; CODE; BLOCK; BLOCK; CODE
Derwent Class: T01; W04
International Patent Class (Main): G06K-009/00
File Segment: EPI

10/5/6 (Item 4 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015951117 **Image available**
WPI Acc No: 2004-108958/200411
XRPX Acc No: N04-086577
Digital image signal processing method for watermark detector , **involves** filtering **range of sample values to band of non-interest using** pre - filter **and transforming** filtered **signal to compute correlation for phase shifts**
Patent Assignee: KONINK PHILIPS ELECTRONICS NV (PHIG)
Inventor: KALKER A A C M; LINNARTZ J P M G; STARING A A M; TALSTRA J C
Number of Countries: 105 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 200406121	A2	20040115	WO 2003IB2529	A	20030702	200411 B

Priority Applications (No Type Date): EP 200277660 A 20020702
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200406121	A2	E	15	G06F-017/10	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW
Designated States (Regional): AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW

Abstract (Basic): WO 200406121 A2
NOVELTY - The method involves receiving a signal in the form of integer signal samples having a range of sample values. The range of signal sample values is **filtered** to a band of non-interest by a **pre - filter** (19). A Fourier transform circuit (12) transforms the **filtered** signal into frequency coefficients to compute correlation for phase shifts between the signal and a predetermined **watermark** pattern (15).
DETAILED **DESCRIPTION** - An INDEPENDENT CLAIM is also included for a digital signal processor.
USE - Used for processing a digital image signal for a **watermark detector** .
ADVANTAGE - The **pre - filter filters** the range of signal sample values to a band of non-interest to reduce the word length, thereby reducing quantization **noise** .
DESCRIPTION OF DRAWING(S) - The drawing shows a block diagram of a **watermark detection** architecture including a **pre - filter** .
Folding buffer (11)
Fourier transform circuit (12)
Phase **extraction** circuit (13)
Watermark pattern (15)
Pre - filter (19)
pp; 15 DwgNo 3/6
Title Terms: DIGITAL; IMAGE; SIGNAL; PROCESS; METHOD; **WATERMARK** ; DETECT; **FILTER** ; RANGE; SAMPLE; VALUE; BAND; NON; INTEREST; PRE; **FILTER** ; TRANSFORM; **FILTER** ; SIGNAL; COMPUTATION; CORRELATE; PHASE; SHIFT
Derwent Class: T01; U22; W04
International Patent Class (Main): G06F-017/10
File Segment: EPI

10/5/7 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015582124 **Image available**
WPI Acc No: 2003-644281/200361
XRPX Acc No: N03-512470
Embedded message extraction **method for image processing applications, involves multiplying** extracted **messages of image with multiplier that is inversely proportional to** noise **in** extracted **message**
Patent Assignee: EASTMAN KODAK CO (EAST)
Inventor: HONSINGER C W
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 6567532	B1	20030520	US 99453247	A	19991202	200361	B

Priority Applications (No Type Date): US 99453247 A 19991202
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6567532	B1		7	G06K-009/00	

Abstract (Basic): US 6567532 B1
NOVELTY - The tile boundaries in the image are correlated with flat Fourier amplitude carrier to **extract** embedded messages. The **extracted** messages are multiplied with a multiplier which is inversely proportional to **extracted** message **noise** , in order to generate several weighted embedded messages. The weighted embedded messages are summed for **extracting** message bits.
DETAILED **DESCRIPTION** - An INDEPENDENT CLAIM is also included for embedded message **extraction** program.
USE - For **extracting** embedded message from digital photograph image during image processing. Also applicable in data hiding, information hiding, **watermarking** and steganography applications.
ADVANTAGE - The signal quality for data embedding application are improved since each recovered embedded message is weighted with respect to **noise** in the recovered messages in which the signal is reinforced to cancel the **noise** .
DESCRIPTION OF DRAWING(S) - The figure shows a flowchart illustrating the method for **extracting** embedded message.
pp; 7 DwgNo 3/4
Title Terms: EMBED; MESSAGE; **EXTRACT** ; METHOD; IMAGE; PROCESS; APPLY; MULTIPLICATION; **EXTRACT** ; MESSAGE; IMAGE; MULTIPLIER; INVERSE; PROPORTION; **NOISE** ; **EXTRACT** ; MESSAGE
Derwent Class: T01
International Patent Class (Main): G06K-009/00
File Segment: EPI

10/5/8 (Item 6 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015411106 **Image available**
WPI Acc No: 2003-473246/200345
XRPX Acc No: N03-376406
Digital data embedding apparatus for e.g. music data, embeds electronic watermark **information into continuous change-of-phase-component of music signal using** filter
Patent Assignee: UNIV TOHOKU (TOHO); NISHIMURA R (NISH-I); SUZUKI Y (SUZU-I)
Inventor: NISHIMURA R; SUZUKI Y
Number of Countries: 032 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week

JP 2003044067 A 20030214 JP 2001236698 A 20010803 200345 B
US 20030059082 A1 20030327 US 2002209868 A 20020802 200345
EP 1286348 A2 20030226 EP 200217246 A 20020731 200345

Priority Applications (No Type Date): JP 2001236698 A 20010803
Patent Details:
Patent No Kind Lan Pg Main IPC Filing Notes
JP 2003044067 A 9 G10L-011/00
US 20030059082 A1 G06K-009/00
EP 1286348 A2 E G11B-020/00
Designated States (Regional): AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI SK TR

Abstract (Basic): JP 2003044067 A
NOVELTY - An embedding unit embeds **electronic watermark** information into continuous change-of-phase-component of music signal using **filter** . The music signal is spaced through the aspect of time change of the phase modulation **characteristic** and embeds **electronic watermark** .
DETAILED **DESCRIPTION** - INDEPENDENT CLAIMS are included for the following:
(1) digital data detector;
(2) digital data embedding detector;
(3) digital data embedding method; and
(4) digital data embedding detection method.
USE - For embedding **electronic watermark** for multimedia data such as music data.
ADVANTAGE - Enables detecting illegal copy of music data and identifying source of media effectively by fundamental-tone easy signal stored by record worker of sale origin.
DESCRIPTION OF DRAWING(S) - The figure shows a graph of the auto correlation function obtained by detection, relating S/N ratio of addition **noise** and music signal.(Drawing includes non-English language text).
pp; 9 DwgNo 9/12
Title Terms: DIGITAL; DATA; EMBED; APPARATUS; MUSIC; DATA; EMBED; ELECTRONIC; **WATERMARK** ; INFORMATION; CONTINUOUS; CHANGE; PHASE; COMPONENT; MUSIC; SIGNAL; **FILTER**
Derwent Class: P86; W04
International Patent Class (Main): G06K-009/00; G10L-011/00; G11B-020/00
International Patent Class (Additional): H04N-005/913
File Segment: EPI; EngPI

10/5/9 (Item 7 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015352498 **Image available**
WPI Acc No: 2003-413436/200339
XRPX Acc No: N03-330693
Information signal-processing apparatus for processing e.g. moving image, has signal-processing circuit that determines output data value, based on data values corresponding to information signals extracted **among input information signals**
Patent Assignee: SONY CORP (SONY)
Number of Countries: 001 Number of Patents: 001
Patent Family:
Patent No Kind Date Applicat No Kind Date Week
JP 2003143533 A 20030516 JP 2001333816 A 20011031 200339 B

Priority Applications (No Type Date): JP 2001333816 A 20011031
Patent Details:
Patent No Kind Lan Pg Main IPC Filing Notes
JP 2003143533 A 13 H04N-005/91

Abstract (Basic): JP 2003143533 A

NOVELTY - Input units (101-103) input information signals which have the same original signal as basic information. A portion **extracting** circuit (104) **extracts** the data portion corresponding to the input information signals. Based on the data values corresponding to the **extracted** information signals, a signal-processing circuit (105) determines the output data value.

DETAILED **DESCRIPTION** - An INDEPENDENT CLAIM is also included for an information signal-processing method.

USE - For processing moving image, still picture, music, or voice.

ADVANTAGE - Degradation of former signal is efficiently restrained from added information, such as **noise** and **electronic watermark** , thus improving image quality and tone quality.

DESCRIPTION OF DRAWING(S) - The figure is a block diagram showing the information signal-processing apparatus.

Input units (101-103)

Portion **extracting** circuit (104)

Signal-processing circuit (105)

pp; 13 DwgNo 1/6

Title Terms: INFORMATION; SIGNAL; PROCESS; APPARATUS; PROCESS; MOVE; IMAGE; SIGNAL; PROCESS; CIRCUIT; DETERMINE; OUTPUT; DATA; VALUE; BASED; DATA; VALUE; CORRESPOND; INFORMATION; SIGNAL; **EXTRACT** ; INPUT; INFORMATION; SIGNAL

Derwent Class: P85; T01; T03; W02; W03; W04

International Patent Class (Main): H04N-005/91

International Patent Class (Additional): G09C-005/00; G11B-020/02; G11B-020/10; H04N-001/387; H04N-007/08; H04N-007/081

File Segment: EPI; EngPI

10/5/10 (Item 8 from file: 350)

DIALOG(R)File 350:Derwent WPIX

015274010 **Image available**

WPI Acc No: 2003-334941/200332

XRPX Acc No: N03-268416

Voice operated electronic appliance uses speech recognizer to identify speech in sound signal and produce corresponding command for electronic appliance

Patent Assignee: SAMSUNG ELECTRONICS CO LTD (SMSU)

Inventor: CHA S; OH Y; CHA S B; OH Y H

Number of Countries: 030 Number of Patents: 005

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 1278183	A1	20030122	EP 2002252890	A	20020424	200332	B
JP 2003044069	A	20030214	JP 2002208771	A	20020717	200332	
US 20030018479	A1	20030123	US 2002101718	A	20020321	200332	
KR 2003008726	A	20030129	KR 200143581	A	20010719	200336	
CN 1399247	A	20030226	CN 2002105516	A	20020412	200337	

Priority Applications (No Type Date): KR 200143581 A 20010719

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 1278183	A1	E	13	G10L-015/26	
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR					
JP 2003044069	A		8	G10L-011/00	
US 20030018479	A1			G10L-021/00	
KR 2003008726	A			G10L-015/00	
CN 1399247	A			G10L-015/00	

Abstract (Basic): EP 1278183 A1

NOVELTY - A tuner (2) receives broadcast signals, an external input unit (22) receives signal reproduced from an image reproducer, a key input unit (25) allows input of control commands and a **watermark** generator (40) **extracts** spectrum information of amplified audio signals when a speech recognition mode is selected through a wireless

microphone (60). A control unit (24) receives the command and controls operation of the appliance accordingly.

DETAILED **DESCRIPTION** - AN INDEPENDENT CLAIM is included for a method of receiving sound.

USE - Controlling operation of electronic appliances, e.g. a TV receiver, by speech recognition.

ADVANTAGE - Elimination of effect of background **noise** from the receiver itself, by **watermarking** it in a way that enables its removal from the sound signal picked-up by the remote control unit microphone.

DESCRIPTION OF DRAWING(S) - The drawing shows a controlled appliance

Control unit (24)

Input unit (25)

Watermark generator (40)

Microphone (60)

pp; 13 DwgNo 2/4

Title Terms: VOICE; OPERATE; ELECTRONIC; APPLIANCE; SPEECH; RECOGNISE; IDENTIFY; SPEECH; SOUND; SIGNAL; PRODUCE; CORRESPOND; COMMAND; ELECTRONIC ; APPLIANCE

Derwent Class: P86; W03; W04

International Patent Class (Main): G10L-011/00; G10L-015/00; G10L-015/26; G10L-021/00

International Patent Class (Additional): G10L-013/00

File Segment: EPI; EngPI

10/5/11 (Item 9 from file: 350)

DIALOG(R)File 350:Derwent WPIX

015179441 **Image available**

WPI Acc No: 2003-239971/200323

XRPX Acc No: N03-191135

Device for protecting against copying optically readable digital data carriers for digital **documents adds** watermarks **to data carriers by placing extra coding data within a redundancy area of a logical/physical data carrier format.**

Patent Assignee: BRAINSHIELD TECHNOLOGIES INC (BRAI-N)

Inventor: WITTKOETTER E

Number of Countries: 100 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200319552	A1	20030306	WO 2002EP9392	A	20020822	200323	B
DE 10140237	A1	20030327	DE 1040237	A	20010822	200323	

Priority Applications (No Type Date): DE 1040237 A 20010822

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200319552	A1	G	61	G11B-020/00	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW

Designated States (Regional): AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SK SL SZ TR TZ UG ZM ZW

DE 10140237	A1			G11B-027/10	

Abstract (Basic): WO 200319552 A1

NOVELTY - Digital content (2) for a digital document is added to a data carrier unit (DCU) (10) in a physical/logical structure assigned to the DCU. A predefined change in this structure adds extra coding to the DCU so that the extra coding is not detected during playback/reproduction of the DCU by a playback/reproduction unit (15) so as to make no effect on playback. To recognize an authorized copy of the DCU, verifying devices (20) determine whether the extra coding is available.

DETAILED **DESCRIPTION** - An INDEPENDENT CLAIM is also included for a method for operating the present invention.

USE - This device may be used for protecting against copying digital documents onto compact disks, DVDs and digital tape media (claimed).

ADVANTAGE - The playback and reproduction unit does not output the additional coding because of automated error correction. Bypassing this error correction allows an appropriate verification unit to **extract** coding data from random error data shown as digital white **noise** . Copying a data carrier by illegal professional copying devices would lead to the removal of the additional coding and so create a clear criterion for an illegal copy.

DESCRIPTION OF DRAWING(S) - The drawing shows a simple block flow diagram of units for producing, playing and verifying according to the operation of the present invention.

Digital content (2)
Data carrier unit (10)
Playback/reproduction unit (15)
Verifying device (20)
pp; 61 DwgNo 1/20

Title Terms: DEVICE; PROTECT; COPY; OPTICAL; READ; DIGITAL; DATA; CARRY; DIGITAL; DOCUMENT; ADD; **WATERMARK** ; DATA; CARRY; PLACE; EXTRA; CODE; DATA; REDUNDANT; AREA; LOGIC; PHYSICAL; DATA; CARRY; FORMAT
Derwent Class: T03
International Patent Class (Main): G11B-020/00; G11B-027/10
File Segment: EPI

10/5/12 (Item 10 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015166259 **Image available**
WPI Acc No: 2003-226787/200322
Inserting/ extracting **method of** digital watermark **and device thereof**
Patent Assignee: MARKANY INC (MARK-N)
Inventor: CHOI J U; LEE H H; CHOI J W
Number of Countries: 001 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
KR 2002084588	A	20021109	KR 200123984	A	20010503	200322	B
KR 405827	B	20031114	KR 200123984	A	20010503	200421	

Priority Applications (No Type Date): KR 200123984 A 20010503
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
KR 2002084588	A		1	H04N-007/24	
KR 405827	B			H04N-007/24	Previous Publ. patent KR 2002084588

Abstract (Basic): KR 2002084588 A

NOVELTY - A **digital** **watermark** inserting/ **extracting** method and a device thereof are provided to insert data such as logo to an input image by converting to a binary data and **extract** the **watermark** in the shape of logo visually.

DETAILED **DESCRIPTION** - A **digital** **watermark** inserting/ **extracting** device includes a data conversion element(310) for converting an input data of a predetermined format to display in the **watermark** to a binary data, pseudo **noise** code generating element(320) for generating a random number as a pseudo **noise** code according to a predetermined key value, a multiplying element(330) for multiplying the random number with a predetermined constant according to the binary data, and an adder(130) for adding the **watermark** generated by the multiplication with the input image.

pp; 1 DwgNo 1/10

Title Terms: INSERT; **EXTRACT** ; METHOD; DIGITAL; **WATERMARK** ; DEVICE
Derwent Class: W02; W04
International Patent Class (Main): H04N-007/24

File Segment: EPI

10/5/13 (Item 11 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014979037 **Image available**
WPI Acc No: 2003-039551/200303
XRPX Acc No: N03-030929
Block-based watermark **data** detecting **method for compact disk, involves detecting hidden message of** watermark **data using deviation calculated between center data and reference data**
Patent Assignee: SONY CORP (SONY); SONY ELECTRONICS INC (SONY)
Inventor: WENDT P D
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20020126870	A1	20020912	US 2001802244	A	20010308	200303	B

Priority Applications (No Type Date): US 2001802244 A 20010308
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20020126870	A1		23	G06K-009/00	

Abstract (Basic): US 20020126870 A1
NOVELTY - A content data is **filtered** and an absolute value of **filtered** data, is calculated to produce an absolute value data having center data corresponding to centers of each block of block-based **watermark** data (30). The center data is compared to reference data to calculate any deviation between them. A hidden message of a **watermark** data is **detected** using the calculated deviation.
USE - For **detecting** block-based **watermark** data on optical memory media such as compact disk, digital video disk, CD-ROM.
ADVANTAGE - Enables detecting the hidden message of the block-based **watermark** data within the content data even if the **watermark** data has been shifted or resized or if **noise** has been added to it.
DESCRIPTION OF DRAWING(S) - The figure shows a schematic illustration of the block-based **watermark** data **detecting** method.
Block-based **watermark** data (30)
pp; 23 DwgNo 2/13
Title Terms: BLOCK; BASED; **WATERMARK** ; DATA; DETECT; METHOD; COMPACT; DISC ; DETECT; HIDE; MESSAGE; **WATERMARK** ; DATA; DEVIATE; CALCULATE; DATA; REFERENCE; DATA
Derwent Class: T01; U21; W04
International Patent Class (Main): G06K-009/00
File Segment: EPI

10/5/14 (Item 12 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014966754 **Image available**
WPI Acc No: 2003-027268/200302
Device of inserting audio watermark **and method thereof and detection device thereof and method thereof**
Patent Assignee: ELECTRONICS & TELECOM RES INST (ELTE-N)
Inventor: JUNG H; KIM G H; KIM H B; KIM S W; KIM Y W; MYUNG H
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
KR 2002053980	A	20020706	KR 200082256	A	20001226	200302	B

Priority Applications (No Type Date): KR 200082256 A 20001226
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes

KR 2002053980 A 1 G10L-021/00

Abstract (Basic): KR 2002053980 A

NOVELTY - A device of inserting an audio **watermark** is provided to perform a WT(Wavelet Transform) while inserting a **watermark** , and to **detect** the **watermark** without original audio data, thereby inserting the **watermark** in real time and improving security.

DETAILED **DESCRIPTION** - A **watermark** generator(10) generates a **watermark** signal, and band-spreads the **watermark** signal by using a PN(Pseudo **Noise**) signal. A WT unit(30) wavelet-transforms an original audio signal to **separate** the signal into a low frequency band and a high frequency band, and calculates entropy by WT. A modulator(20) modulates the band-spread **watermark** signal by using a predetermined frequency, and controls a gain of the modulated **watermark** signal by using the entropy. An IWT((Inverse Wavelet Transform) unit(40) inserts the gain-controlled **watermark** signal into the low frequency band, and performs an IWT process for the **watermark** signal of the low frequency band and an audio signal of the high frequency band, then outputs an audio signal inserted with an **watermark** .

pp; 1 DwgNo 1/10

Title Terms: DEVICE; INSERT; AUDIO; **WATERMARK** ; METHOD; DETECT; DEVICE; METHOD

Derwent Class: P86; W04

International Patent Class (Main): G10L-021/00

File Segment: EPI; EngPI

10/5/15 (Item 13 from file: 350)

DIALOG(R)File 350:Derwent WPIX

014958877 **Image available**

WPI Acc No: 2003-019391/200301

XRPX Acc No: N03-014851

Digital watermark **embedding method for embedding a** digital watermark **in an image signal by adding to image** signal digital watermark **formed by step for arranging in two-dimensional fashion** watermark **formed by addition**

Patent Assignee: MARKANY INC (MARK-N); INTOMEDIA INC (INTO-N); INTOMEDIA MARKTEK CO LTD JH (INTO-N)

Inventor: CHOI J; LEE J; CHOI J U; LEE J S; CHOI J W

Number of Countries: 100 Number of Patents: 004

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200287251	A1	20021031	WO 2002KR728	A	20020419	200301	B
KR 2002081937	A	20021030	KR 200121531	A	20010420	200317	
AU 2002249678	A1	20021105	AU 2002249678	A	20020419	200433	
KR 423159	B	20040318	KR 200121531	A	20010420	200445	

Priority Applications (No Type Date): KR 200121531 A 20010420

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200287251	A1	E	53	H04N-007/24	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW

Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZM ZW

KR 2002081937	A		G11B-020/10	
AU 2002249678	A1		H04N-007/24	Based on patent WO 200287251
KR 423159	B		G11B-020/10	Previous Publ. patent KR 2002081937

Abstract (Basic): WO 200287251 A1

NOVELTY - A user key and an inherent key are used and their respective pseudo- **noise** codes are generated. The pseudo- **noise** code

generated based on the user key and the pseudo- **noise** code generated based on the inherent key are added. A **digital watermark** formed by a step for arranging in a two-dimensional fashion a **watermark** formed by the addition is added to the image signal.

DETAILED **DESCRIPTION** - INDEPENDENT CLAIMS are included for:

(a) a **digital watermark detecting** method

(b) a **digital watermark** embedding apparatus

USE - For spatially forming a **watermark** and embedding and **detecting** the **watermark** in an image.

ADVANTAGE - Enhances robustness against image variations such as rotation, enlargement/reduction, cutting, and **filtering** .

DESCRIPTION OF DRAWING(S) - The drawing is a block diagram for schematically showing a structure of a **watermark** generator of the **watermark** embedding apparatus.

pp; 53 DwgNo 3/14

Title Terms: DIGITAL; **WATERMARK** ; EMBED; METHOD; EMBED; DIGITAL; **WATERMARK** ; IMAGE; SIGNAL; ADD; IMAGE; SIGNAL; DIGITAL; **WATERMARK** ; FORMING; STEP; ARRANGE; TWO; DIMENSION; FASHION; **WATERMARK** ; FORMING; ADD

Derwent Class: T01; W04

International Patent Class (Main): G11B-020/10; H04N-007/24

International Patent Class (Additional): H04N-001/387

File Segment: EPI

10/5/16 (Item 14 from file: 350)

DIALOG(R)File 350:Derwent WPIX

014919224 **Image available**

WPI Acc No: 2002-739931/200280

XRPX Acc No: N02-582927

Audio watermark detection **system employed in computing environments, detects normalized correlation value from** watermark **and** watermarked **audio signal based upon preset relation**

Patent Assignee: KIROVSKI D (KIRO-I); MALVAR H (MALV-I); MICROSOFT CORP (MICT)

Inventor: KIROVSKI D; MALVAR H

Number of Countries: 001 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 20020107691	A1	20020808	US 2000733576	A	20001208	200280	B
US 6738744	B2	20040518	US 2000733576	A	20001208	200433	

Priority Applications (No Type Date): US 2000733576 A 20001208

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 20020107691	A1		23	G10L-011/00	
US 6738744	B2			G10L-015/22	

Abstract (Basic): US 20020107691 A1

NOVELTY - A pattern generator generates a **watermark** (w) comprised of defined values (a,b). A correlation module computes a normalized correlation value from a **watermarked** audio signal (y) and from the **watermark** based upon a relation, (sum(y/w=a)/card(w=a))-(sum(y/w=b)/card(w=b)), to **detect watermark** in the audio signal. A preprocessor cepstrum **filters** the **watermarked** signal to reduce the associated **noise** .

DETAILED **DESCRIPTION** - INDEPENDENT CLAIMS are included for the following:

(1) Audio **watermark detection** method;

(2) Computer readable medium for storing audio **watermark detection** program; and

(3) Modulated signal for **detecting** audio **watermark** .

USE - Employed in computing environments such as personal computers (PCs), server computers, hand-held or laptop devices, multiprocessor systems, microprocessor based systems, programmable consumer electronics, wireless phones, and equipments, general and special

purpose appliances, application specific integrated circuits (ASIC), network PCs, minicomputers, mainframe computers, distributed computing environments, etc., for **detecting watermarks** in audio signals such as music clips.

ADVANTAGE - Employs an improved correlation module to determine the presence of a **watermark** using less expensive materials, quicker calculations and a more accurate correlation test. Employs a cepstrum **filter** and dynamic processing to minimize the effect of the **noise** in the **watermarked** signal. Employs a mechanism that does not provide decipherable clues to a digital pirate as to the value or location of the embedded **watermark** .

DESCRIPTION OF DRAWING(S) - The figure shows the block diagram of the audio production and distribution system having the **watermark detection** system.

pp; 23 DwgNo 1/8

Title Terms: AUDIO; **WATERMARK** ; DETECT; SYSTEM; EMPLOY; COMPUTATION; ENVIRONMENT; DETECT; NORMALISE; CORRELATE; VALUE; **WATERMARK** ; **WATERMARK** ; AUDIO; SIGNAL; BASED; PRESET; RELATED

Derwent Class: P86; T01; U21; W04

International Patent Class (Main): G10L-011/00; G10L-015/22

International Patent Class (Additional): G10L-019/00; G10L-021/00

File Segment: EPI; EngPI

10/5/17 (Item 15 from file: 350)

DIALOG(R)File 350:Derwent WPIX

014707692 **Image available**

WPI Acc No: 2002-528396/200256

XRPX Acc No: N02-418379

Digital watermarking **for compressed audio, includes segmenting an original audio signal into frames, and** extracting feature **parameters from each of the frames**

Patent Assignee: XU C (XUCC-I); KENT RIDGE DIGITAL LABS (KENT-N)

Inventor: XU C

Number of Countries: 002 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 200249363	A1	20020620	WO 2000SG205	A	20001215	200256 B
US 20040059918	A1	20040325	WO 2000SG205	A	20001215	200422
			US 2003450736	A	20031007	

Priority Applications (No Type Date): WO 2000SG205 A 20001215

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200249363	A1	E	34	H04N-007/24	
Designated States (National): SG US					
US 20040059918	A1			H04L-009/00	

Abstract (Basic): WO 200249363 A1

NOVELTY - Method to embed a **watermark** in a digitally uncompressed audio signal comprises: segmenting an original audio signal into frames; **extracting feature** parameters from each of the frames; assigning, based on the **feature** parameters and the masking threshold an embedding framework for each of the frames, embedding the **watermark** information into a **watermarked** audio frame; and compressing the **watermarked** audio signal.

DETAILED **DESCRIPTION** - INDEPENDENT CLAIM included for the following:method to embed a **watermark** ; method to **extract** an embedded **watermark** ; computer-readable medium

USE - For **digital watermarking** .

ADVANTAGE - Provides copyright protection for authorized copies of digital multimedia content, including audio, and the tracing of illegal copies of such digitally compressed and uncompressed content. The **watermark** may be embedded or **extracted** in both compressed and uncompressed formats. While the **watermark** is inaudible within its

host signal and extremely difficult to remove via unauthorized access, it may be easily **extracted** by an authorized user. The **watermark** is also highly resistant to incidental and intentional distortion, alteration or copying. The embedded **watermark** does not adversely affect the audio quality, e.g., audibility, or result in the alteration of the bit rates in a compressed domain signal and is compatible with state-of-the-art signal processing methods and phenomenon, such as D/A and A/D conversions, and the overlay of **noise** and electrical and magnetic interference, **filtering** , re-sampling, and in particular, decoding and re-encoding processes.

DESCRIPTION OF DRAWING(S) - The diagram shows the **watermark** embedding process of the invention for both the uncompressed and compressed domains

compressed domain (105)

uncompressed domain (106)

pp; 34 DwgNo 1/8

Title Terms: DIGITAL; **WATERMARK** ; COMPRESS; AUDIO; SEGMENT; ORIGINAL; AUDIO; SIGNAL; FRAME; **EXTRACT** ; **FEATURE** ; PARAMETER; FRAME

Derwent Class: T01; W01; W02; W04

International Patent Class (Main): H04L-009/00; H04N-007/24

International Patent Class (Additional): G06T-001/00

File Segment: EPI

10/5/18 (Item 16 from file: 350)

DIALOG(R)File 350:Derwent WPIX

014631797 **Image available**

WPI Acc No: 2002-452501/200248

Audio watermarking **method using decomposition** characteristic **of wavelet transformation**

Patent Assignee: KIM J H (KIMJ-I)

Inventor: KIM J H; PARK S H; SHIN J H

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
KR 2002003251	A	20020112	KR 2000547	A	20000107	200248	B

Priority Applications (No Type Date): KR 2000547 A 20000107

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
KR 2002003251	A		1	G11B-020/10	

Abstract (Basic): KR 2002003251 A

NOVELTY - An audio **watermarking** method using decomposition **characteristic** of wavelet transformation, which generates a **watermark** that has no **noise** and is strong to attack using wavelet transformation and psychoacoustic model and inserts the **watermark** into audio data, is provided to prevent illegal reproduction of the audio data.

DETAILED **DESCRIPTION** - An audio signal is wavelet-transformed using wavelet transformation to be decomposed into an approximation value and a detail value. The original signal is compressed using CODEC that employs psychoacoustic model and then reproduced again to perform wavelet transformation, to thereby obtain S64. Werr that is the difference between the original signal and the approximation value of S64 is obtained. The value of the approximation region of the original signal is multiplied by a PN-sequence value, and samples are multiplied by different scale factors using pseudo random **noise** as the scale factors, to generate random **watermark** . The Werr and random **watermark** are added up to generate **watermark** . In order to detect a signal into which **watermark** was inserted, wavelet transformation is performed and a difference between two signals to **extract** a **watermark** value. Correlation between the **extracted** value and the original **watermark** value is inspected to verify the ownership of **watermark** .

pp; 1 DwgNo 1/10

Title Terms: AUDIO; **WATERMARK** ; METHOD; DECOMPOSE; **CHARACTERISTIC** ; TRANSFORM
Derwent Class: T03
International Patent Class (Main): G11B-020/10
File Segment: EPI

10/5/19 (Item 17 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014189703 **Image available**
WPI Acc No: 2002-010400/200201
XRPX Acc No: N02-008738

A method of generating an electronic signature for the distribution of original multimedia content includes extracting **invariant** features **that are robust to modifications, quantizing the content and encrypting using a public key**

Patent Assignee: KENT RIDGE DIGITAL LABS (KENT-N); UNIV COLUMBIA NEW YORK (UYCO); CHANG S (CHAN-I); NAYASIMHALU D (NAYA-I); SUN Q (SUNQ-I); ZHONG D (ZHON-I)
Inventor: CHANG S; NAYASIMHALU D; SUN Q; ZHONG D
Number of Countries: 094 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200147278	A2	20010628	WO 2000US34803	A	20001220	200201	B
AU 200139673	A	20010703	AU 200139673	A	20001220	200201	
US 20040128511	A1	20040701	WO 2000US34803	A	20001220	200444	
			US 2003149685	A	20030129		

Priority Applications (No Type Date): US 2000177300 P 20000121; US 99172719 P 19991220; US 2003149685 A 20030129
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200147278	A2	E	42	H04N-007/26	
AU 200139673	A				Based on patent WO 200147278
US 20040128511	A1			H04L-009/00	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW

Abstract (Basic): WO 200147278 A2

NOVELTY - Invariant robust to added **noise** , scaling / rotating modifications are **extracted** from multimedia content (401) of an image, audio or video signal. The content is quantized (404, 405) using vector quantization techniques and hashed codewords selected from a codebook are assigned (496) to divided source blocks. The **extracted** invariant **features** and quantized content are encrypted by a private key (408) to form a digital signature (409).

DETAILED **DESCRIPTION** - An INDEPENDENT CLAIM is also included for a method of verifying multimedia content having an associated digital signature including **extracting** invariant **features** (411), quantizing the content (414, 415), decrypting the signature using a public key (421) and verifying the received content (419).

USE - The method of generating an electronic signature is used for the distribution of original multimedia content.

ADVANTAGE - Authentication of multimedia content is robust, accurate and flexible so that it can respond to manipulations specific to multimedia such as lossy compression, quality enhancement and transparent **watermarking** .

DESCRIPTION OF DRAWING(S) - The figure shows a flow diagram of processes of signing and verifying multimedia content.

pp; 42 DwgNo 4/12

Title Terms: METHOD; GENERATE; ELECTRONIC; SIGNATURE; DISTRIBUTE; ORIGINAL;

CONTENT; **EXTRACT** ; INVARIANT; **FEATURE** ; ROBUST; MODIFIED; QUATERNISED;
CONTENT; PUBLIC; KEY
Derwent Class: T01
International Patent Class (Main): H04L-009/00; H04N-007/26
File Segment: EPI

10/5/20 (Item 18 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013896572 **Image available**
WPI Acc No: 2001-380785/200140
XRPX Acc No: N01-279198
Digital data e.g. multimedia data watermarking **method, involves performing pseudo random interleaving of data before adding** filtered **pseudo random** noise **sequence to digital data**
Patent Assignee: THOMSON MULTIMEDIA (THOH); THOMSON LICENSING SA (CSFC) ; THOMSON MULTIMEDIA SA (THOH)
Inventor: DUHAMEL P; FURON T
Number of Countries: 094 Number of Patents: 007
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200074371	A1	20001207	WO 2000EP4053	A	20000505	200140	B
AU 200047557	A	20001218	AU 200047557	A	20000505	200140	
FR 2794600	A1	20001208	FR 997139	A	19990601	200140	
EP 1181810	A1	20020227	EP 2000929504	A	20000505	200222	
			WO 2000EP4053	A	20000505		
TW 465224	A	20011121	TW 2000109631	A	20000519	200248	
CN 1353906	A	20020612	CN 2000808174	A	20000505	200262	
JP 2003529957	W	20031007	WO 2000EP4053	A	20000505	200370	
			JP 2001500546	A	20000505		

Priority Applications (No Type Date): FR 997139 A 19990601
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200074371	A1	E	24	H04N-001/32	
AU 200047557	A			H04N-001/32	Based on patent WO 200074371
FR 2794600	A1			H04N-005/272	
EP 1181810	A1	E		H04N-001/32	Based on patent WO 200074371
TW 465224	A			H04N-001/32	
CN 1353906	A			H04N-001/32	
JP 2003529957	W		36	H04N-001/387	Based on patent WO 200074371

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI

Abstract (Basic): WO 200074371 A1
NOVELTY - A pseudo random **noise** sequence is added to the input of a **filter** with a predefined impulse response. The **filtered** pseudo **noise** sequence is added to the data after performing the pseudo random interleaving operation of the data. The inverse interleaving operation of the summed up data is performed to obtain the **watermarked** data.
DETAILED **DESCRIPTION** - INDEPENDENT CLAIMS are also included for the following:
(a) method for **detecting watermark** ;
(b) **watermarking** system;
(c) **watermark detection** system
USE - In **watermarking** of digital data such as still picture image, video data, audio data, multimedia data.
ADVANTAGE - Protects against the piracy of digital and multimedia data. Prevents deduction of private key from public key. Eliminates

detection or modification of **watermark** in **detection** process.

DESCRIPTION OF DRAWING(S) - The figure shows the block diagram of **watermarking** system.

pp; 24 DwgNo 4/4

Title Terms: DIGITAL; DATA; DATA; **WATERMARK** ; METHOD; PERFORMANCE; PSEUDO; RANDOM; INTERLEAVED; DATA; ADD; **FILTER** ; PSEUDO; RANDOM; **NOISE** ; SEQUENCE; DIGITAL; DATA

Derwent Class: T01; T03; W02; W04

International Patent Class (Main): H04N-001/32; H04N-001/387; H04N-005/272

International Patent Class (Additional): G06T-001/00; H04N-007/08; H04N-007/081

File Segment: EPI

10/5/21 (Item 19 from file: 350)

DIALOG(R)File 350:Derwent WPIX

013507221 **Image available**

WPI Acc No: 2000-679165/200066

XRPX Acc No: N00-502823

Digital **audio signal** water marking **method involves embedding a portion of** digital watermark **in sample data and articulation parameters of synthesizer-architecture format**

Patent Assignee: KENT RIDGE DIGITAL LABS (KENT-N)

Inventor: SUN Q; WU J; XU C

Number of Countries: 003 Number of Patents: 003

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200045545	A1	20000803	WO 99SG4	A	19990128	200066	B
GB 2363302	A	20011212	WO 99SG4	A	19990128	200205	
			GB 200120310	A	20010821		
GB 2363302	B	20031105	WO 99SG4	A	19990128	200377	
			GB 200120310	A	20010821		

Priority Applications (No Type Date): WO 99SG4 A 19990128

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200045545	A1	E	38	H04L-009/00	
Designated States (National): GB SG US					
GB 2363302	A			H04L-009/00	Based on patent WO 200045545
GB 2363302	B			H04L-009/00	Based on patent WO 200045545

Abstract (Basic): WO 200045545 A1

NOVELTY - The **digital watermark** (126) is embedded in digital audio data by embedding at least a portion of **digital watermark** in sample data (124) and circulation parameter (122) of synthesizer-architecture format.

DETAILED **DESCRIPTION** - INDEPENDENT CLAIMS are also included for the following:

(a) **digital** audio signal **watermarking** apparatus;

(b) method of **extracting digital watermark** from **watermarked** digital audio data;

(c) computer program product for embedding **digital watermark** in digital audio data;

(d) computer program product for **digital watermark extraction** method;

(e) apparatus for **extracting digital watermark** from **watermarked** digital audio data;

(f) system for **watermarking** wavetable audio file;

(g) method of playing **watermarked** wavetable audio file

USE - For **digital** audio **watermarking** of wavetable (WT) format audio, including downloadable sounds (DLS) in musical industry. And for copyright of artistic works.

ADVANTAGE - Provides **watermark** that is inaudible within its host WT signal and difficult or impossible to remove by unauthorized access. The **watermark** can be easily **extracted** by authorized person such as

owner of the copyright in the audio work, and it is robust against incidental and intentional distortions. As WT audio is a parametrized digital audio, it is difficult to attack using typical signal processing techniques, such as adding **noise** and re-sampling. By embedding **watermark** in articulation parameters, the **detected** distortions of **watermarks** in WT sample data is corrected.

DESCRIPTION OF DRAWING(S) - The figure shows the block diagram of **digital** audio **watermark** embedding system.

Circulation parameter (122)

Sample data (124)

Digital watermark (126)

pp; 38 DwgNo 1/7

Title Terms: DIGITAL; AUDIO; SIGNAL; WATER; MARK; METHOD; EMBED; PORTION; DIGITAL; **WATERMARK** ; SAMPLE; DATA; ARTICULATE; PARAMETER; SYNTHESISER; ARCHITECTURE; FORMAT

Derwent Class: P86; T01; W02; W04

International Patent Class (Main): H04L-009/00

International Patent Class (Additional): G10H-007/02; G10L-013/02

File Segment: EPI; EngPI

10/5/22 (Item 20 from file: 350)

DIALOG(R)File 350:Derwent WPIX

013365128 **Image available**

WPI Acc No: 2000-537067/200049

XRPX Acc No: N00-397669

Embedding proprietary watermark **information into input signal, establishes latter's level at preset frequency via frequency transformation and adds encoded segment amplitude** matched **to this frequency level**

Patent Assignee: SONY CORP (SONY)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2000207828	A	20000728	JP 992025	A	19990107	200049	B

Priority Applications (No Type Date): JP 992025 A 19990107

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2000207828	A		14	G11B-020/10	

Abstract (Basic): JP 2000207828 A

NOVELTY - To the input signal stream (DA1) is added the encoded proprietary information serving as a **watermark** , the combined output emerging as DA2'. Input signal undergoes frequency transformation from which the magnitude of a specific constituent frequency is determined. The encoded segment is amplitude modulated to **match** the magnitude of the above constituent frequency before being added to the input signal.

DETAILED **DESCRIPTION** - First a carrier wave (SC) of specific frequency is PSK modulated as per the proprietary **watermark** information into which is diffused the pseudo **noise** information (PN) from the PN generator (17). The mixed output after amplitude modulation constitutes the encoded segment.

USE - **Watermark** insertion becomes helpful in establishing the authenticity of copyrighted audio recordings.

ADVANTAGE - Apart from serving as identifying code, the **watermark** component helps synchronization/demodulation operations performed over the recorded input signal data.

DESCRIPTION OF DRAWING(S) - The figure shows the block diagram of the constituent operational submodules within the encoder and the method of adding the encoding segment to the input signal.

PN Generator (17)

pp; 14 DwgNo 2/7

Title Terms: EMBED; **WATERMARK** ; INFORMATION; INPUT; SIGNAL; ESTABLISH; LATTER; LEVEL; PRESET; FREQUENCY; FREQUENCY; TRANSFORM; ADD; ENCODE;

SEGMENT; AMPLITUDE; **MATCH** ; FREQUENCY; LEVEL
Derwent Class: W04
International Patent Class (Main): G11B-020/10
File Segment: EPI

10/5/23 (Item 21 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013268783 **Image available**
WPI Acc No: 2000-440689/200038
Related WPI Acc No: 2000-255567; 2001-549123; 2001-647132; 2002-153583
XRPX Acc No: N00-328752

Data embedding method for use as watermarks **, signatures and captions in digital data, involves embedding input data into host data in accordance with perceptual mask conducted in frequency domain**

Patent Assignee: UNIV MINNESOTA (MINU)
Inventor: BONEY L; SWANSON M D; TEWFIK A H; ZHU B
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 6061793	A	20000509	US 9624979	P	19960830	200038 B
			US 9750587	P	19970624	
			US 97918891	A	19970827	

Priority Applications (No Type Date): US 97918891 A 19970827; US 9624979 P 19960830; US 9750587 P 19970624
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6061793	A		15	H04N-007/167	Provisional application US 9624979 Provisional application US 9750587

Abstract (Basic): US 6061793 A

NOVELTY - The data is input and the input data is embedded into the host data in accordance with a perceptual mask conducted in the frequency domain. The embedded data is then embedded in accordance with perceptual mask conducted in the temporal domain.

DETAILED **DESCRIPTION** - The data embedded into host data represent pseudo **noise** sequence as a unique identifier for the host data. An INDEPENDENT CLAIM is also included for the computerized system for embedding data.

USE - For networked data and in information system.

ADVANTAGE - The **watermark** embedded within the sound host data is capable of being **extractable** even if common signals are applied to host data. The embedded **watermark** is **noise** like and its location over multiple blocks of the data is unknown. Thus, phi rate has insufficient knowledge to directly remove the **watermark** .

DESCRIPTION OF DRAWING(S) - The figure shows the flowchart of data embedding the method.

pp; 15 DwgNo 1/4

Title Terms: DATA; EMBED; METHOD; **WATERMARK** ; SIGNATURE; CAPTION; DIGITAL; DATA; EMBED; INPUT; DATA; HOST; DATA; ACCORD; MASK; CONDUCTING; FREQUENCY ; DOMAIN
Derwent Class: T01; W02; W04
International Patent Class (Main): H04N-007/167
File Segment: EPI

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              WATERMARK? OR WATER()MARK? OR TRANSLUCENT()DESIGN?
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              UTHORIT? OR ATTRIBUT?
S3      20287   FILTER? OR LOOKUP OR LOOK()UP OR SEARCH? OR SEEK? OR QUER?
              OR MATCH? OR QUEST? OR PURSU? OR FIND? OR RETRIEV? OR EXTRACT?
               OR SEPARATE? OR DIFFERENTIAT? OR SCREEN? OR PREFILTER? OR PR-
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S5       8062   DETECT? OR DETERMIN? OR DECID? OR RESOLV? OR ASCERTAIN? OR
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S6          3   S1 (2N) S5
S7          1   S1 AND S2 AND S3 AND S4
S8          4   S6 OR S7
S9          0   S8 NOT PY>1995
File 256:TecInfoSource 82-2004/Jul
         (c)2004 Info.Sources Inc
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S8        524   S6 AND S3
S9        139   S8 AND S4
S10        88   S7 AND S5
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S14         6   RD (unique items)
File   8:Ei Compendex(R) 1970-2004/Aug W1
         (c) 2004 Elsevier Eng.  Info. Inc.
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         (c) 2004 ProQuest Info&Learning
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         (c) 2003 EBSCO Pub.
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         (c)2004 Japan Science and Tech Corp(JST)
File  99:Wilson Appl. Sci & Tech Abs 1983-2004/Jul
         (c) 2004 The HW Wilson Co.
File  95:TEME-Technology & Management 1989-2004/Jun W1
         (c) 2004 FIZ TECHNIK
File 583:Gale Group Globalbase(TM) 1986-2002/Dec 13
         (c) 2002 The Gale Group
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             OR MATCH? OR QUEST? OR PURSU? OR FIND? OR RETRIEV? OR EXTRACT?
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S10        11   S7 (S) S5
S11        22   S7 OR S9 OR S10
S12         1   S11 NOT PY>1995
S13         0   S12 NOT PD>19950508
File  15:ABI/Inform(R) 1971-2004/Aug 12
         (c) 2004 ProQuest Info&Learning
File 810:Business Wire 1986-1999/Feb 28
         (c) 1999 Business Wire
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         (c) 2004 CMP Media, LLC
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         (c) 2004 The Dialog Corp.
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         (c) 2004 The Gale Group
File 636:Gale Group Newsletter DB(TM) 1987-2004/Aug 12
         (c) 2004 The Gale Group
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         (c) 1999 PR Newswire Association Inc
File 613:PR Newswire 1999-2004/Aug 11
         (c) 2004 PR Newswire Association Inc
File  16:Gale Group PROMT(R) 1990-2004/Aug 12
         (c) 2004 The Gale Group
File 160:Gale Group PROMT(R) 1972-1989
         (c) 1999 The Gale Group
File 553:Wilson Bus. Abs. FullText 1982-2004/Jul
         (c) 2004 The HW Wilson Co
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